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Trends in Professional Education*

ALPHONSE M. SCHWITALLA, S. J.

Dean, The School of Medicine, St. Louis University; President, The North Central Association of Colleges and Secondary Schools

The clamor for educational adjustments grows insistently from day to day, swelling in its volume to a veritable national demand. Like the muezzins who spread the announcement of the hour of prayer from their minarets around an Arabian town and from town to town around the entire country, so our modern educational prophets pass on the clamor for a change in educational processes from mouth to mouth. Some insist that there must be revolution in our schools. Some would be satisfied with an accelerated evolution. Others frankly say that the whole scheme of things is completely and entirely wrong and that something else must be found to cover the nakedness of our illiteracy instead of the threadbare garments that we now call education. And still others insist that we should abandon all efforts at educational development of the masses and return to a 'rugged individualism' in our attitudes and dealings between man and man. Sometimes these demands are outspoken; sometimes they come to us in a whispered innuendo. That there is dissatisfaction, however, on this, many diverse schools of thought seem to be in complete agreement. The educational diagnosticians have been numerous; they have been busy even if a little precipitate; they have been daring even if a little foolhardy; they have been radical even if just a little enamored of their own prophetic character. Like Isaiah, they already see the world in ruins before it is ruined, but unlike Isaiah they seem to offer no remedy against the day of ruin; sometimes one might suspect that they enjoy their role as prophets of evil and that they would not wish to see the ruin prevented.

It must be confessed that the depression gave the pre-depression prophets their big opportunity. They are fond of pointing out that they told us so. And today, they are just as fond of telling us that something must be done to stop the coming of another depression. In that older day, as measured

*Read at the 1936 meeting of the American Council on Education.

by years it is not so very old but measured by world changes it might just as well have been three eras ago, there was some justification for such views as that of Kirkpatrick who:

Believes that pupils and students . . . are said to find new and better ways of thinking and living in probationers required to learn carefully the ways of beliefs of their elders . . . we must look to our schools for creators not imitators . . . our school youth must be permitted to face their own problems and their own responsibilities.

But, today, even this is somewhat antiquated thinking. Today we would deny, if we are most in line with present-day advanced thought, that there need not be a task that is set for our youth, not even the task of experimenting with themselves or of facing their own problems and responsibilities, or of determining for themselves the course they will take. We are rather looking for the magic formula which will translate the theory of individualistic self-determination into a practical program. Just how the change came about, anyone of us may determine for himself. No doubt the stresses laid down by biological thinking upon individual development has not been without its effect upon educational thinking. The emphasis placed by the psychologist upon individual differences has been taken out of its context. The insistence of the political demagogue that, despite the socializing trends, it is only in a socialistic or communistic community that the individual is freest has also contributed its share in molding many of the trends in educational thinking. Personally, I would hazard the guess that the trend towards individual self-realization in our educational processes has at least been accelerated if not re-emphasized by the political and governmental assumption of responsibility for the masses. Is it not always thus in world history? When a new mass movement in one direction takes place, are there not always to be found those who re-clothe the thinking that has been in the fresher garments of the new thought and thus make such occasions into the propaganda for their previous gospel? In social governments, we find at least verbal emphasis upon individual values; in individualistic governments we find at least verbal emphasis upon community thinking. Whatever be the explanation, we will probably admit that the educational world is not as simple and as set as only two decades ago, and perhaps even one

decade ago, as we thought it was. Then we whirled through space more or less condensed and smooth as is our own earth in the solar system. Today we resemble rather the fire-ball that we call the planet Jupiter. It might, of course, raise an astronomical argument whether we are younger or older in our development by reason of such a planetary metamorphosis.

Turning now to the more formal world of education and leaving the world of broad speculation, we are not left altogether without signposts for our analytical thought even if the signposts are erratic in pattern and even if they lead we know not whither. This much is certain—we have without doubt left the old, so long the accepted and useful land of educational values of the last century, far behind us. In those days, to be an educated man, meant something rather definite. It meant a fairly well-defined tradition of cultural studies; a philosophical attitude of mind towards history and tradition; it meant a recognition of differences—philosophy, science, art, literature, theology were compartments within which men could be classified with proper designations of their interests, compartments with walls high enough to separate interests yet not with walls so high but that one might easily glance with a not too disinterested eye into all the other compartments. In those simpler days, the world had some understanding of the areas within which an educated man would be expected to move with relative confidence and familiarity.

Now, all of this is today, for good or for evil, it is not for me to say, a picture of the past. The walls between these compartments have worn thin; they have, in fact, broken down at ever so many places. An educated man today may still be regarded as quite educated even though he has not pigeon-holed his intellectual acquisitions in five or more compartments. As a matter of fact, we come very close to our present problems when we hazard the guess that today a man may be considered educated even if his interests lie in but one major field and, even in that major, within a rather confined area of that major field. It is true that much of this has been brought about by the trend in all our intellectual interests. There is more education if for no other reason than this—that there are more people who have at least a fair fragment of education. There are more per-

sons working in intellectual fields. There is an incredibly more rapid accumulation of things to be known. When there is a plenty of anything, it seems always to be purchasable at a lower price, and so perhaps we have come to lay less stress upon the value of education. It is certain, to me at least, that we have broken down a formerly existing correlation between knowledge and education. In that older day, to know more was to be more; today, we may know more without necessarily growing in the fullness of being. Knowledge was formerly considered power; today, power is derived much more than formerly from sources that have no necessary connection with an educative process.

And again narrowing our field of intellectual survey still more and confining our thinking within the framework of formal educational processes, these philosophies seem to find their interpretation in the practical aspects of our curricula and our administrative procedures. It is true we have worked persistently at formalizing these administrative procedures. Thanks to the dictatorship of the registrar, the larger masses of students are much better regimented than were the smaller masses of an earlier day. There is less fear that any one individual in the huge masses that seek our high schools and colleges and universities will escape with fewer than the required number of units and credit hours. Our manifold distinctions in courses, our rigorous sequences, our prerequisites and sequence requirements—all these and the countless other alleged guarantees of educational adequacy co-exist as in all other social revolutions with philosophies of education that point in quite the opposite direction, as if the orientations of the individual were one thing and the orientations of the individual in masses were quite a different thing.

Our prophets are demanding that we orient educational procedures with reference to world trends and social change. No one has adequately defined for us just what these world trends are or these social changes are to which we should adjust our educational procedures. And yet, we are asked to adjust.

To come down to more practical details and to leave abstruse considerations, it has been pointed out that the emphasis upon vocational and professional education is one of the best means of adapting the educational processes to

modern needs. One should logically demand, in estimating the value of such a requirement, what is meant by a vocation and what by a profession. One is curious to get an adequate differentiation between the processes of carpentry and the practice of medicine, between a course in wood turning as wood turning and wood turning as occupational therapy. It is true that it is hard to put these things into words. Many have tried and many have failed, and, therefore, I could labor under no illusion that I could say what others have not been able to say. Whatever one criterion might be adopted to differentiate between a trade and a profession, it breaks down at some point of interest when broadly applied. If one uses the criterion of intellectual presupposition, one must perforce conclude that any handicraft can be built up upon the largest possible theoretical foundation. If one uses the criterion of skills to designate a practical art, one is reminded quickly of the artistry of surgery which thus far, except in the days of centuries ago, no one has dared to designate as a trade. If one becomes more subtle and uses as a criterion to differentiate a trade and a profession by the concept self-consumption, one can easily be led into absurdities by showing that any trade, if it is adequately exercised in an unselfish spirit, renders the need of the further use of that trade less and less likely. Thus far, for example, no one has designated plumbing as a profession just because the plumber may and really could do an "adequate job" which might render the need of a plumber to repair his plumbing unnecessary for many a day to come. And so all of these criteria break down at some point and one is perforce coerced into the admission that these intellectual interests, like so many human interests, defy the taxonomic tendencies of the educational formalist.

We might then consider the distinction between academic and professional education for just a few moments. The academician still insists that there is a distinction. The "professionalist" insists just as strongly that if there is a distinction there might just as well not be. It may be the old story of the shield that is silver on one side and gold on the other, but it may be that there is merit in the debate. Again I rejoice that I need not be the arbiter in the dispute.

Somehow, in our thinking, we classify areas of human interest and areas of curricular interest quite differently, even

though we have reached the point when we give bachelor of arts degrees for course sequences that imply neither art nor the arts and bachelor of science degrees for the completion of curricula that have in them no whit of science and that are themselves far from scientific. The traditionalist still insists upon differentiation between cultural courses and professional courses. The progressive who claims to be more sincere insists that such distinctions are entirely out of date. As a matter of fact, cultural courses are not the same as humanistic courses and, by a strange irony of history, humanism is humanism because it saw the human values in every human interest and, therefore, presumably too in professional interests. But today, the classical languages and English and, at least in those schools which do not classify history as merely a social science, history, too, are dubbed by the college catalog as humanistic and presumably, therefore, as cultural courses; but nursing and laboratory technology and dentistry are professional by antithesis. What shall we do about it? One might grant the validity of the concept of a cultural course, but the "professionalist" contends that courses in torts or child welfare or surgical anatomy are just as cultural, depending upon the teacher, the approach and the method of teaching, as are courses in Euripides or Indian philosophy or the ethical concepts in Mosaic law. The "professionalist" may grant that the classicist has much and valid thinking to say for himself, but he insists also that the classicist has no business erecting partitions between a classical museum and the chemical laboratory basing his architectural efforts in wall building upon the very tenuous foundation of cultural values. These distinctions, so it is contended on all sides by the pacifists who placate educational differences of opinion, seem to rest upon somewhat arbitrary definitions. A course in organic quantitative analysis may have cultural value of the highest order even though surely only few humanists would admit such value, just as a course on the love sonnets of Shakespeare may be as dry as a mathematical Sahara even though it should throb and pulse with every emotion of the human heart.

If this line of reasoning is at all valid, I should like to hazard three simple theses on the relation between academic and cultural education: These three theses are briefly these:

1. As a preparation for life, education, be it academic or professional, is one;
2. Educational processes are diverse, and academic processes should be a foundation for professional educational processes;
3. A profession itself should regard the processes which it defines for its self-development and not leave this responsibility altogether in the hands of those not of its own profession.

Let me address myself to a brief discussion of each of these three theses. We are here accepting the functional definition of education which states that education is a preparation for life. In such a definition one must understand more fully in what sense one talks of life and secondly, what may be meant by preparation for *life*. It must be pointed out that the life of a professional person, of a physician or a lawyer or a dentist, does not altogether consist in the exercise of his professional functions. Even a lawyer plays golf and a dentist appreciates music and a doctor enjoys reading a non-medical book; it is clear, therefore, that in the processes of education, the life for which our educative processes prepare a professional man is much more than merely the exercise of his profession. The professional man's life is at the same time a human life. As for the preparation, it is purely arbitrary to assign certain preparatory functions to one school and others to another. It is my contention that a school of medicine or a school of law and, let us hope, a school of nursing, or a school of dentistry, or a school of engineering can and must in a measure prepare its students for all the aspects of their life and not merely for some of the aspects. The school assumes responsibility for the student of medicine, the student of law or of nursing, and not merely for the nursing or the legal or the medical aspects of that student. Any other concept than this as the basic philosophy of a school, or as the objective to which the school aims, takes the school out of the classification as a professional school and puts it into the classification of a technical school. It is my contention that, if a person comes to a school of medicine with a profound appreciation of Greek literature or history or the niceties of the English language, his very professional preparation will under proper auspices intensify those appreciations and make of a man not

merely a physician but a deeper lover of his Greek or his history or his English. It has been repeatedly said, and well said, that to understand the microcosm it is necessary only to understand fully any one of the all but infinite number of microcosms all about us. Any one of the fields of professional interest like the older and the major fields, such as medicine or law or engineering, or be it one of the newer and as yet minor fields, such as, for example, that of dietetics or of institutional administration, can and, in the truest concept of professional education, must yield human values and human appreciations in just as true a sense as we admit are yielded by our study of the Greek poets or the Latin orators. If all of this is granted, where, I ask, is the distinction between academic and professional education?

The so-called professional courses can and do yield a harvest of culture, of refinement, of appreciation in addition to their technical content. We might choose illustrations from a vast number of sources. Surely I may be pardoned if I choose mine on this occasion from the field of medicine. Can there be anything more human in its appeal, more educative in the appreciation which it yields of human tragedy, more suggestive of the deepest stirrings of the human heart than the daily and hourly contact which the student of medicine has in his out-patient practice with the ills and sufferings of humanity? If it be objected that the student of medicine pays little attention to anything but the mere technical symptomatology which he is evaluating, my answer can only be that such need not be the case and, if necessary, he must be shown that behind a venereal disease looms a wrecked home; behind a mental obsession there fibrillates a broken heart; through the shadows of a Roentgenogram of a tubercular chest he must see the writhing agony on the face of a love-distracted husband. These things have literary cultural educational values that are not only equal to the dramatic incidents and literary descriptions through which we teach our human appreciations, our appeals for character development and our stresses upon literary expression but, in addition, they have the merit as educational instruments of immediacy and of reality.

As for the mental faculties which professional education on this high level can and must call into play, ever so much

has been said, but ever so much more remains still unsaid. We have not probed even the shallowest depths of the educational processes in the formation of the professional man. Again, let me choose my illustrations from my closest surroundings. Through our educational processes, we attempt to develop many capacities in our students. Call them by whatever diverse names you wish, depending upon the school of psychology in which you have been brought up, we will probably all recognize them if I describe them in such older terms as logical power, imagination, both reproductive and creative, memory with its many different specifications, emotional control, appeal to sentiment, determination and will power. Now all of these and ever so many more might well be enriched to an all but unsuspected degree through our professional education. We may deeply admire and try to teach our students the mental "mechanisms" by which Francis Thompson can pass from the simple thought that he sought escape from the anxieties of conscience and the beckoning voice of Christ calling him to a better life and his expression of this thought in these lines:

I fled him . . . down the labyrinthian ways
Of my own mind and in the midst of tears
I hid from him and under running laughter.

But, I ask you, are these mental processes so very different in their mechanism, in their significance, in their dramatic effectiveness than when a white-gowned pharmacologist steps from his microscope and the seclusion of his laboratory to the bedside of a patient in the crowded ward and suddenly sees with a vision of inspired genius the connection between the relaxing effect of magnesium sulphate on the paramecium under his microscope and its corresponding effect upon a human patient in a state of tetanic convulsion, thus rescuing him from a certainly anticipated death, and by further extension of the creative and synthetic imagination changes the death rate from tetanus during the World War in a short period of not more than three or four months from more than 75 to less than 10 per cent? Of course, such instances are extremely common, particularly in recent biological history. They might be multiplied here to the point of tedium. If it be objected that I am choosing my examples from a field which is peculiarly rich in its romantic or its dramatic appeal, I can only say that, first of all, such instances, at least in so

far as they affect individual lives, are common enough in the life of each medical student and, secondly, every one of the professions, at least of the major that lay even approximately an adequate claim to such a title, must perforce afford ample illustrations of the same principle. In illustration of the first part of this last statement, let me ask you whether you have ever had the satisfaction of having a medical student come to your office to tell you of his experience in delivering his first baby. I have seen them come to me, their eyes "with fine frenzy rolling" directly from the hovel and the bedside of some poor Negro mother to speak to me of the thrill of having done again what has happened on indescribably numerous occasions in the world's history, but also of the tears of gratitude in the mother's eyes, of her overwhelming joy and of the satisfaction which the student himself felt in the knowledge that some poor Negro waif is going to be called by his own first name in recognition of the "doctor's" services.

As for the second part of my statement which I have just made, I might cite actual cases of the thrill of the laboratory technologist when she either sees in her findings under the microscope the corroboration of a physician's clinical diagnosis and realizes the significance of the tiniest drop of blood in establishing a suspected streptococcus hemolyticus infection in the saving of the human life or, as happens none too rarely, when she must approach the physician and report negative findings and must thus challenge the physician to renew his struggle with an as yet unknown foe who is strangling his patient. Once I talked to an engineering student who had followed the construction of a bridge in an architect's office from its first conception on the tracings to its dedication. On another occasion, I spoke to a law student who even prior to his graduation had just competed his first effort at compromise in a delicate case involving equities and thus insured the continued safety of three homes involving no fewer than six adults and seven children. On still another occasion very recently I heard a law enforcement officer, who, by the way, considered himself as a professional man, describing in vividly glowing terms the duties that fell to his lot and who was carried away for the moment by his superb exploit in tracing a wayward boy through the endless mazes of underworld haunts and who finally brought

him a willing captive not to the criminal court but to the side of a paternal and sympathetic juvenile judge. When such cases occur in one's life—and surely each one of us could enumerate them with just a little thought—one realizes that the poetry of life is not always written in words, musical and suggestive as they may be; that dramatic incidents are not the rareties that have found expression on canvass under the masterful brush of the painter, but that on all sides of us the men who lay no claim to being poets or dramatists, tragedians or comedians, painters or sculptors or historians are actually bringing about climaxes and crises worthy of the expressive power of a Vergil, a Dante or a Shakespeare, of a Murillo, a Raphael or a Titian, of a Wagner, a Tschaikowsky or an Elgar.

The point that I am here making is that, for a preparation for life, the educational processes which we have called cultural and those which we have called professional are really one in their objective. Any man given capacity and application can draw out of one, equally as out of the other, those elements of self-development which result in culture and refinement, in that self-development which, when it is attained, reveals to us the hidden significance of life, resolves the complexities of life into its simplicities and places before our vision now the sweetnesses and again the drama, now the unsuspected humor and again the even more unsuspected tragedy, now the sublimities and again the incredible pathos of every day human life in the midst of which "we live and move and have our being."

And yet when all is said and done, there is validity in the distinction between professional and academic or cultural education. After all, the immediate aim of the two is different. If we must be simple, let us avoid a certain amount of speculation on the underlying philosophies and let us suggest, for the purposes of differentiation, that academic or cultural education concerns itself predominantly even if not exclusively with the mental content, and uses instruments largely of the mind and formulates problems largely in the mental realm; whereas professional education must give more attention to the development of skills, the use of instruments on a physical plain and the formulation of problems concrete in character, without, however, neglecting the mental content in each of these various aspects. With such a working hypothesis for

the purpose of differentiation, it is easy to see why the educationalist will regard history or literature or religion or philosophy as cultural subjects, while he regards biochemistry or pleading or mechanics or orthodontia as professional subjects. Regarding these differentiations, I should like to invite attention to a few tentative and half-formed generalizations which have gradually impressed themselves upon me throughout my contacts in both of these fields of education.

First of all, there is only one Rome, but many roads lead to Rome. There is only one VanDyck, but there are many painters who belong to the Vandyke School. I have already hinted at the thought that to my mind culture is not to be achieved only by one broad highway but along any one of very numerous roads which all converge upon a well-known and deeply appreciated objective, that culture which we are all striving for in our educational processes. How are we to use these processes? The educationalist, to distinguish him from the educator, is concerned with the instruments of his own profession, and so it is not surprising that he has thought of the achievement of culture through curricula and courses, through credit systems for differentiated efforts and achievements. He has perhaps, therefore, by force of sheer necessity, found it to be quite impossible to evaluate as it should be evaluated, the personality of the teacher. I have the highest regard for Mark Hopkins' log and the student at the other end of it, even though the humorists have recently told us that the log has been sawed up to form state boards; but I wish to point out that in illustration of my thesis I might just as well have put Osler where Mark Hopkins is alleged to have seesawed. I think Osler would have reflected and speculated and educated just as effectively while he seesawed. In fact, I believe we might all agree that quite a number of persons of our acquaintance who are not necessarily classicists or professors of English or professors of history but who rather claim humbler titles, such humbler titles as professor of biology or a professor of internal medicine or a professor of engineering, might have educated and seesawed almost as effectively. I might mention Wheeler, for example, or Jennings or Steinmetz or Van Eten, not to speak of hosts of others.

The educational process, after all, finds itself focussed in the man who uses the process. I cannot ever forget that

it is D'Arcy Wentworth Thompson, the director of the International Committee for the investigation of the North Sea, who penned the lines:

Nigh forty years ago, I first stepped out on the east-windy streets of a certain lean and hungry town (lean, I mean, as regards scholarship) where it was to be my lot to spend thereafter many and many a year. And the very first thing I saw there was an inscription over a very humble doorway, "Hic mecum habitant Dante, Cervantes, Moliere." It was the home of a poor schoolmaster, who as a teacher of languages eked out the scanty profits of his school. I was not a little comforted by the announcement. So the poor scholar, looking on the ragged regiment of his few books, is helped, consoled, exalted by the reflection: Hic mecum habitant. . . . Homer, Plato, Aristoteles. And were one in a moment of inadvertence to inquire of him why he occupied himself with Greek, he might perchance stammer (like Dominie Sampson) an almost inarticulate reply; but more probably he would be stricken speechless by the enormous outrage of the request, and the reason of his devotion would be hidden from the questioner forever.

I cannot but think that, when such a man who can write thus undertakes the biological investigation of the North Sea, results of value for human welfare cannot but emerge.

If it is objected that men such as these were educated men before they became scholars in a restricted field, I shall enthusiastically and whole-heartedly agree with the critic. The point is that I am not contending that there is not a place for cultural curricula and courses or rather, let me say, for cultural processes *par excellence*, but I am contending that culture is the exclusive effect of certain kinds of educational processes. I shall admit as, of course, I cannot but admit, that certain subject matter lends itself particularly well for imparting what we have traditionally referred to as culture and refinement, but my complaint is that in too many quarters that end result is attributed to content matter rather than to the pupil and his instructor. My contention is that we have developed stress on the wrong fulcrum and that it is not surprising, therefore, if our seesawing is somewhat higgledy-piggledy and our mental semicircular canals have thus been over-stimulated to the point of educational dizziness. Should we not rather lay our stress upon the development of

teachers in the professions, upon the development of men who by their statuesque character, by a certain epic grasp of the significances of life, by their larger interpretations of the meaning of manhood and womanhood, rather than by mere knowledge, even though they themselves contribute to the creation of such knowledge, can impress students both in the academic as well as in our professional schools. I know that all schools would welcome such men, and the rejoinder to my remarks is just as patent to me as it is to any one of our listeners. The problem is to find such men. But if we place our hands in our lap and commit ourselves fatalistically to a *laissez faire* policy in such matters, we are not applying to the solution of this problem that acumen and sense of relative values which we have brought to the solution of many another problem in the educational field. Let us look for the man when we promote teachers, when we make our administrators and our leaders.

By an extension of these same remarks I would apply the same analysis to the problem of student selection with perhaps one significant stress. We cannot but be sympathetic with the antithesis between the aristophilic and the demophilic ideal in the choice of our students. In a democracy, there must necessarily be found two kinds of schools, two kinds of educational policies and processes. On the one hand, however, I should want to endorse, with all the emphasis I can place upon the topic, the importance of academic guidance, vocational guidance, personal guidance, hygienic guidance and the focussed correlation of all four in the educational process for the development of each individual; I should like to stress the commanding importance of the discovery of individual differences, the delicate differentiation of techniques in the evaluation and utilization of these differences, and the sympathetic and diplomatic attitudes which we as teachers have developed in translating our discoveries into differentiated programs. I would, however, propose an even further step in all of this. I should want to discover an adequate number of individuals who can make the dry bones of psychological tests and social tests for response to environment into living realities. Somehow, in all of the work that has thus far been done, it impresses me that motivation has been lacking. The work has been done, I must admit, and, from personal observation in some schools, the work has

been superbly done. Records have been accumulated, but unfortunately sometimes only to gather dust. In still other schools due to the presence of a deeper commanding and appreciative personality, the work which records are supposed to facilitate has been achieved without records even though, I believe, it might have been done still better if those records had been available. The key which will unlock the wealth of cultural content contained in our courses and curricula must be in the master hand of the teacher. If the hand is really a master hand, it will make very little difference whether the box which is unlocked contains tools of steel or wood or manuscripts or the less tangible instruments of logic. The master hand will know how to draw out of all of these the spirit of culture and scholarship which is the objective of our educational processes.

If our guidance program is effective we will have something to give to the student whose I.Q. is 80 as well as to him whose I.Q. is 140; to him whose emotional releases are volcanic as well as to him whose emotions are as undisturbable as buried granite.

To bring these remarks to a focus, it would seem to me that, if we could only find some way of bringing a unified cultural objective into both our academic and our professional endeavors, our problem would have been materially advanced towards a solution. We can do so, I believe, most easily by laying progressively more stress upon the personality traits of the teacher by initiating a propaganda which will have for its objective the discovery of outstanding individuals in our schools and the utilization of these individuals for a progressively greater influence upon our students. I should like to see efforts directed towards the development of such men.

It is, furthermore, my half-formed conclusion that professional men are more deeply appreciative of the cultural effects of academic courses and curricula than are the academically-minded professors mindful of the possible cultural effects of the professional courses and curricula. It is strange, but in many instances I have found it but too true, that somehow the academic mind regards it as its own prerogative to impart culture. They suspect the professional man of an unimaginative pragmatism. On not too few occasions they translate this attitude into opposition to certain approaches and fields of knowledge which, if they only knew it, would sub-

serve in an amazing way the objectives which the professor of a cultural course has most deeply at heart. I have heard a professor of philosophy insist that a course in chemistry, when given to a student who intends to become a physician, is a professional course even though that same course when given to an arts student, may have a certain cultural value. To be sure, I have sometimes heard teachers of professional subjects despairingly discuss certain courses in literature or philosophy or religion, but such attitudes are rare enough. An insight into and appreciation of each of the groups into the objectives of the other, it seems to me, is definitely indicated.

And this brings me to my third and last point. Cannot the American Council on Education find some way of providing a forum for exchange of views on the objectives of education in these two seemingly separate fields of educational endeavor? The volume of energy and effort which is now going on in professional fields in defining educational requirements needs, I believe, in practically each professional field the influence of many viewpoints. I could illustrate this statement by a large number of examples if I could avoid the danger of increased tediousness to my audience. We might take, for example, the newly formed curriculum in nursing. We cannot but endorse the efforts which have been made to shift the fulcrum of the curriculum from an exclusively medical to an inclusively social center of gravity. But it seems to me, after a somewhat protracted study, that, in the minds of some persons, nursing is to develop into a welfare profession rather than into a profession auxiliary to health care. There is much more to health care than simply social welfare. There are highly technical procedures which must be taken over from the medical field; in fact, I am still one of those who insists that medicine must be the dominant influence in the development of the nurse and that the social aspect of nursing cannot be more commanding in the nursing field than it is in the medical field. A broader interchange of view will at least show the framers of such curricula what other contributions are possible to the development of any one of the professions.

Similarly, the demand is growing in certain quarters for a more extensive recognition of social values in the medical curriculum. This demand has been for a time almost vulgarly

clamorous. If it has temporarily died down, I am trembling with anticipation that it will again be raised, perhaps with added insistence by reason of the period of recovery from fatigue which has been granted. Now, it seems to me that, divesting ourselves of all prejudices, medicine has a social significance, but its first effort cannot be social influence or economic influence or an educative influence; its first effort must be the restoration to health of the individual in the masses. Of course, I am not aware of the pendulum swing of history, but even in the face of that recognition we are not bound to withhold a certain amount of frictional impeding of that pendulum merely because sooner or later the common sense of mankind will bring it back to a sane attitude. There is need of balance in such thinking. I have seen requirements developed during the last two or three years in hospital administration, in laboratory technology, in radiological technology, in occupational therapy, in physical therapy technology, in dietetics, in social work, in medical social work, in the various branches of dentistry, in teacher training, in commerce and finance, even timidly, it must be confessed, in law. These efforts cannot but achieve the sympathetic approval of each one of us, but surely we are all anxious to contribute divergent viewpoints upon these many efforts since they all have their significance for human welfare, they all produce their cultural effects and none of these efforts, therefore, can be deemed foreign to the mind of the educator.

Let me clarify this point just a little. I am not pleading here to take the development of requirements out of the hands of each of the professions. I am not sympathetic with any move in that direction. Rather would I commit myself to the thesis that each profession must be allowed the fullest measure of self-determination in the development of its own standards or rather its own criteria of excellence. When that is said, however, there still remains the importance of recognizing the relationships of any one of the professions to other human interests. This reasoning extends not only to the field of undergraduate education but also to the field of graduate, and, let us frankly admit it, even to the field of post-doctoral development, subjects which, by reason of lack of time, it has been quite impossible to touch upon. Any one of the professions which recognizes not only its specific responsibilities, but also its broader responsibilities to national

culture and welfare, cannot but profit by the experiences and the suggestions of other professions.

It is significant to my mind that the first suggestion for the creation of a forum in the field of professional education has come not from the cultural groups but from one of the professional groups, for it is the suggestion of Dr. William A. Cutter, of the American Medical Association, that such a forum is urgently needed if the broader educational aspects of professional education are to be completely safeguarded.

Conference on Professional Education

Report of the Secretary

A Conference on Professional Education was held at the Hay-Adams House in Washington, D. C., on the evening of Thursday, May 6, 1937.

Those present were:

Raymond Walters, President, University of Cincinnati.

Rev. Alphonse M. Schwitalla, Dean, St. Louis University School of Medicine.

Walter Wheeler Cook, Northwestern University Law School.

Wortley F. Rudd, Medical College of Virginia, representing the American Association of Colleges of Pharmacy.

Harlan H. Horner, Assistant Commissioner for Higher Education, New York State Education Department.

Rufus Ashley Lyman, University of Nebraska, representing the American Association of Colleges of Pharmacy.

John Kirkland Clark, New York State Board of Law Examiners.

Albert L. Midgley, Secretary, Dental Educational Council of America.

Charles F. Scott, Yale University, representing the Engineers' Council for Professional Development.

Alexander B. Andrews, Secretary, Legal Education and Admission to the Bar Section, American Bar Association.

Donald J. Shank, Assistant to the President, American Council on Education.

C. Willard Camalier, President-Elect, American Dental Association.

William D. Cutter, Secretary, Council on Medical Education and Hospitals, American Medical Association.

President Walters, as chairman, opened the discussion and referred to the paper which had been presented by Father Schwitalla at the Chicago meeting. Father Schwitalla replied with an amplification of his former statement.

Dean Lyman and Commissioner Horner discussed the cultural aspects of preprofessional education. Mr. Clark com-

mented upon the experiences of the New York Board of Law Examiners. Dr. Midgley discussed the ultimate purpose of academic education. Professor Scott and Judge Andrews added their comments. Dr. Cutter spoke of the importance of licensure in determining the objectives of certain types of professional education.

Professor Works explained the policy of the North Central Association. He stated that, in studying universities, the ratings of their professional schools by national associations dealing with professional education were always taken into account in evaluating the institution as a whole.

It was proposed that at the next conference the following questions be discussed:

1. How far should a common preliminary education be required by all the professions?
2. How may the ethics of the professions be promoted?
3. How may universities be influenced in matters concerning professional education?

The meeting adjourned subject to the call of the Chair.

W. D. Cutter,
Acting Secretary.

The Teaching of Bacteriology to Pharmacy Students

GEORGE F. REDDISH
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Bacteriology, as an independent subject, is a newcomer to the curriculum of many pharmacy schools. In some schools materia medica courses have in the past included some instruction in bacteriology and immunology, while in others short separate courses covering these subjects have been offered. In still others full courses in bacteriology have been given for a long time. With the general acceptance of the four-year course in pharmacy, more schools have recently added separate departments devoted to the teaching of bacteriology entirely. This recognition of the importance of this subject to pharmacy students and to pharmacists is another indication of the progress made by schools of pharmacy within recent years.

"Whether bacteriology is as important to the pharmacist as chemistry, pharmacognosy, pharmacology, and the various courses included under the general heading of pharmacy, is perhaps beside the point, but it is, nevertheless, a valuable addition to the pharmacy school curriculum."

Students do obtain additional training in this course which enables them to become even better pharmacists than they would be without it. Many practicing pharmacists today recognize the need of more fundamental knowledge of this subject, and have encouraged the establishment of separate bacteriology departments in our pharmacy schools.

It will be of interest to discuss the teaching of bacteriology to pharmacy students in the light of its subsequent value to them as practicing pharmacists. It is not my intention to outline a course in bacteriology for pharmacy students, nor to attempt to state exactly how such a course should be taught. I shall confine myself to pointing out the value of bacteriology to the pharmacist with the suggestion that such courses be designed to meet his needs. Teachers of bacteriology have their own methods of teaching this subject, but all of us should direct our efforts to the same end—to present the course in such a way that the pharmacist will reap the most possible benefit from the instruction given. In other words, instead of giving a general course in bacteriology, we should, as far as possible, give a course in pharmaceutical bacteriology. Instead of attempting to designate exactly how this should be done, I would prefer to point out the value of such instruction to the pharmacist with the suggestion that courses in bacteriology be planned accordingly.

In what different ways will instruction in bacteriology be valuable to the pharmacist in the practice of his profession? Having had a course in bacteriology, how is the pharmacy student better fitted to become a competent pharmacist—in what respects is he better equipped to establish himself as a member of this ancient and time-honored profession? In the first place a course in bacteriology better equips the pharmacist to cooperate with the physician, the dentist, and the veterinarian to a fuller extent than he could without such training. He is able to intelligently discuss bacteriological matters with members of these professions and often be of assistance to them. Because of the close relationship between

these professions and pharmacists a certain interdependence has grown up between them which becomes stronger and closer as each understands the problems and difficulties of the other, with the result that they expect cooperation from each other. The members of these professions also have more respect for the pharmacists who display a fundamental knowledge of bacteriology and immunology and as a result of this added respect greater confidence in them naturally follows. This mutual respect between the physician and pharmacist is of vital importance to both.

The course in bacteriology provides the pharmacist also with a broad knowledge of a subject which is becoming more and more important to him. This fundamental training first covers methods of growing and studying bacteria, their isolation in pure culture, identification and classification of representative non-pathogens, and pathogens, thorough study of the more important disease-producing bacteria, and careful training in the special technique necessary in these studies. The use of various staining methods for identifying bacteria, demonstrating special and characteristic features, etc. are employed throughout the course. In addition experience is obtained in the various sterilization procedures, in methods of making and sterilizing pharmaceutical solutions, etc. This fundamental training leads up to the special features of the course which are of most importance to practicing pharmacists.

Since the pharmacist by the very nature of his profession is concerned with the prevention and cure of disease—since he compounds prescriptions used for these purposes—he naturally is much interested in the actual cause of these diseases. Studying the cause of infectious diseases and their laboratory diagnosis constitutes one of the most important phases of the course in bacteriology. The laboratory diagnosis of many of these diseases is emphasized to such a degree that the student is competent, by the time he has finished the course, to make an accurate laboratory diagnosis of many of the more common infectious diseases. It is not expected that he will become an expert in these diagnostic procedures, but in an emergency or when a diagnostic laboratory is not available he can actually make these tests and obtain reliable results. While ordinarily the pharmacist is not asked to make these diagnostic tests, and he should not

be if a competent bacteriologist is available, there are times when he may be of assistance to the physician in this way. The fact that he is prepared to do so is important. The physician respects a pharmacist more because of this additional information and training in a subject allied to pharmacy. The pharmacist is for that reason more valuable, at least potentially, to the physicians whom he serves, as well as to his community.

While studying the fundamental characteristics of the bacteria which cause infectious diseases, full consideration is given to the factors concerned in the spread of disease. Methods of preventing disease—preventive medicine as it affects the public health as well as in its relation to the individual—are thoroughly studied. More important to the pharmacist, however, are the methods of preventing and treating diseases as applied to the individual. In this connection, a full understanding of vaccines and anti-sera is of prime importance. The fundamental nature of the various biological agents used for this purpose must be thoroughly understood. To do this requires first of all a comprehensive study of the methods used for making the various vaccines and biological sera. Along with a thorough understanding of the nature of these vaccines and sera together with the processes employed in making them, the student also obtains a clear conception of the manner in which they exert their activity, and how they are used. He learns the precautions which are necessary in the handling of these products, and why such care is so important. He also obtains a thorough understanding of standardization and dosage of these biologicals, as well as a better conception of the necessity for proper care on the part of the pharmacist in storing and handling these preparations. In addition the federal and state requirements as to labeling, dating, storage, etc. are thoroughly considered. As the result of careful training in this phase of bacteriology, the pharmacist is prepared to handle biologicals more intelligently and with more understanding.

In this connection full consideration is given the subject of immunity and resistance to disease—the natural defenses of the body against disease and how these can be maintained, and more particularly to methods for building up immunity. The general principles concerned with immunity, both natural

and acquired, are studied in considerable detail. Those factors which are concerned with health and disease, with infection and resistance, with immunity, with diagnosis and treatment, with immunological agents in general, are all emphasized in their proper relationships. The value to the pharmacist of this part of the bacteriology course cannot be over-emphasized.

The use of germicides in preventing infection and the spread of disease is of much interest to the pharmacist. Since he handles a variety of such preparations—antiseptics and disinfectants—he should know the advantages and the disadvantages of the different compounds available for this purpose. In the treatment of this subject in the bacteriology course, due consideration must be given to laboratory methods of testing these preparations. It is important that this instruction be thorough and accurate. Because of misinformation relative to this subject in professional and lay literature, and even in some text-books, it is all the more necessary that the teacher of pharmaceutical bacteriology keep up-to-date in this field. This is particularly so because of the rapid changes taking place in this field due to the active research constantly being pursued, especially relative to antiseptics. In addition to instruction as to the usefulness of the various classes of antiseptics and disinfectants, the pharmacy student must become acquainted with federal and state laws and regulations used in controlling these products. He must be taught to evaluate the label claims of such products and interpret the directions for use for the benefit of purchasers. Considering the importance of antiseptics and disinfectants in preventing infection and the spread of disease, the pharmacy student may expect to learn much of value regarding this subject in the bacteriology course.

Methods of controlling the sanitary quality of milk, water, and food are studied from the standpoint of federal, state, and municipal laws and regulations. While the pharmacist may not have occasion to actually make these laboratory tests, he should have an intelligent understanding of how they are performed, how they must be interpreted, and in general the value and significance of the various standards relating to these commodities. This part of the bacteriology course should be given the pharmacy student as though he were a potential health officer, because the pharmacist is in a position

to exert an influence for good in the matter of assisting local as well as state and federal health officers in the sanitary control of these necessities, as well as encouraging the application of other sanitary measures for preserving the public health.

It is apparent from this brief survey that the pharmacist benefits in many ways from instruction in bacteriology. He not only is equipped to lend assistance to the physician, the dentist, and the veterinarian in a number of ways, but because of his close contact with the public, he is in a position to disseminate good advice of a general nature which will be helpful to a clearer understanding on the part of the public of the constant menace of infection and disease through insanitary practices, as well as to assist the public to an understanding of accepted methods of preventing infection and disease. He is also an influence for good in supporting the physician, the health officer, the local, state, and federal authorities, in the promulgation and enforcement of laws and regulations for the promotion and protection of the public health.

It may not be amiss to mention another way in which the course in bacteriology is valuable to pharmacy students, and to potential pharmacists—training in the proper pronunciation and spelling of bacteriological terms. While this may seem of incidental importance, in my opinion it is of considerable consequence. I consider this so important that I devote the opening lecture each year to a discussion of this phase of the course. At that time I give a serious warning that throughout the course this feature will be emphasized, even to the extent of penalizing the student for incorrect usage and spelling in class quizzes, tests, and examinations—at least during the first half of the course. It has been my experience that the student soon becomes so accustomed to the proper use and spelling of these technical terms that they become a part of his normal vocabulary.

The technical training obtained in courses in bacteriology is not only useful to pharmacists in the practice of their profession, but the general information derived from such courses has a cultural value which must not be overlooked. Pharmacy students and the pharmacists, while benefiting in large measure from the general information obtained from instruction in bacteriology, will profit most, of course, from the technical information and training which is presented.

The Teaching of Biology to Pharmacy Students

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Courses in pharmacy almost always have included instruction in the science of botany. More recently, general work in zoology has been required in an increasing number of colleges. This requirement is logical when we consider the rapid development within recent years of gland products and other pharmaceuticals of animal origin, and the present day emphasis upon courses that are cognate to the work in pharmacy proper and whose nature is biological. At the present time a few schools of pharmacy are requiring a year of biology in place of botany, or of botany and zoology. In view of these changes and of the present extensive discussion of the cultural aspects of professional education, it might be well to ask a few specific bio-pharmaceutical questions.

Should beginning students in pharmacy be required to take botany? If so, what kind of course should be offered: the so-called pharmaceutical botany, the type-form life-cycle botany now taught in many colleges of liberal arts as it has been for several decades, or the principles-type wherein a considerable emphasis is placed upon subject-matter other than morphology? Should zoology be given a place in the pharmacy curriculum? If so, what nature should this work assume: the traditional one with its emphasis upon the dissection of type-forms, a survey course devoted to the study of principles, or a hybrid zoology which attempts to include the virtues of both of these types? If a semester of general botany and one of general zoology are found advisable, will it be more advantageous to combine them as a year of general biology? And if this is done, what lines should this follow: emphasis on morphology, or upon principles? Is it possible that the pharmacy curriculum would be strengthened by the addition of advanced courses in zoology designed to furnish a basis for a better understanding of physiology, pharmacology, biological assaying, and biochemistry, and by advanced work in botany preparatory to pharmacognosy and drug analysis? If some of the pharmacists of the future are to be trained as plant chemists, or as scientists capable of rendering effective technical aid to hospitals and to other public health agencies, what specialized courses in biology

would best fit them for this type of service? As a pharmacist and a biologist, knowing some of the problems of pharmacy and some of the contributions which biology has to offer, I humbly suggest a few possibilities in answer to these questions.

The teaching of botany to beginning pharmacy students is so universal, and the relation of this discipline to the vegetable drugs is so obvious, that its inclusion needs no further justification. The question here is: what lines should botanical instruction follow? Many believe that students in pharmacy are benefitted most by a course in pharmaceutical botany, where particular emphasis is placed upon plant parts used in medicines, their microscopic anatomy, and upon laboratory procedures designed to teach the student how to prepare these parts for study. In supporting the teaching of pharmaceutical botany in a recent thoughtful article the statement was made that, "For the pharmacist however, it (botany) becomes more than purely a cultural attainment, for he is interested in applying his knowledge in specific cases in order to safeguard his reputation in business by being able to judge accurately his crude drug materials"¹. I cannot see how certain phases of botany can be emphasized while others are minimized or omitted, and the pharmaceutical botany which has been developed in this manner then spoken of as *more* than a purely cultural attainment. I believe it is *less* than a purely cultural attainment, a narrower, albeit more proficient, one. Such early specialization of the field means that pharmaceutical botany is really elementary pharmacognosy. If one believes that early and repeated emphasis upon this receding field in pharmacy is more important than a broader training in plant science, then pharmaceutical botany is justified. I cannot subscribe to this belief.

If general botany is given instead of pharmaceutical, the sort best designed to fit the needs of the pharmacy student should be considered. Traditional courses are of the type-form, life-cycle variety. This method of presentation magnifies some of the objections to general botany mentioned in the article referred to previously. Emphasis is placed upon typical life cycles of the various plant groups and the balance of the time is devoted principally to morphology.

¹Hiner, A. Jour. Ph. Ed. 1, 132 (1937).

Usually there is little time left for a consideration of other phases of the subject.

A number of colleges of liberal arts have recently adopted the principle approach to the subject. Courses following this procedure are in the nature of survey courses in which an attempt is made to enter as many of the fields of plant science as it seems practical to introduce to beginners. In addition to the cytology and histology of plant organs, classification and typical life-cycles, attention is given to plant physiology, ecology, heredity, geography, and evolution. These latter phases are seldom dealt with in pharmaceutical botany and frequently receive slight attention in the type-form, life-cycle botany. Many believe that such phases have no place in beginning botany, but if the course is designated general, as most are, such topics are properly included. Others admit the logic of including these branches in the general course, but state that time does not permit their treatment adequately, that the full session is needed to present the elements of morphology and classification. Such courses should not be designated as general; they should be called what they are: elementary morphology and classification of plants. It is possible to cover the traditional fields, if one is content to omit certain details, and still find time for the other important topics. If botany is to be taught apart from zoology, I believe that for all students, including those in pharmacy, the principles method is the best approach.

There is no such unanimous agreement among pharmaceutical educators respecting the place of zoology in the pharmacy curriculum as is found for botany. Many still expect their students to master physiology and to learn in its applied branch, pharmacology, how drugs produce their effect in the body without even the rudiments of form and function given in general zoology. From a practical angle, in America the pharmacist is the dispenser of contraceptive merchandise, yet in most instances he has no scientific training in the anatomy and physiology of sex. In many schools pharmacy students are expected to understand biochemistry without any preliminary training in one of its basic subjects, zoology. The Pharmaceutical Syllabus requires instruction in public health studies with no biological requirement prerequisite. The same book suggests a course in biological assaying for students who may or may not know anything about the animal

organism, and one in insecticides for those who very probably do not know the difference between a bug, an insect, and a spider. Each of these instances is like expecting a student to do well in quantitative analysis without training in general chemistry. Such a procedure would provoke instantaneous disapproval, yet some of our best schools are following exactly the same fallacy in regard to the advanced courses which are grounded in zoology. The curriculum is top-heavy in this respect, and even those not trained in animal biology should be able to recognize this deficiency.

The kind of zoology which best meets the needs of the pharmacy student may now be considered. Here again, the traditional course is of the type-form variety, in which representative animals are dissected and their minute anatomy learned. Many of these are marine forms whose existence should be known but whose morphology is of slight concern to a practicing pharmacist. This older grasshopper-zoology does not give the pharmacy student what he needs.

The principle type of biology furnishes a broader basis for advanced work, and is better suited as a prerequisite for the pharmaceutical subjects based on zoology. Here many aspects of zoology are noted; form, function embryology, heredity, classification, ecology, geography, and evolution. By omitting some of the details of anatomy it is possible to introduce many phases of the subject never covered in the older courses.

There have been attempts made to revise the older zoology. In these courses type-forms are still emphasized in laboratory and the other phases considered theoretically. This hybrid zoology is not very satisfactory to the champions of either method. Laboratory work is highly desirable for all phases studied in the recitation hall, and a compromise between the two methods is difficult to effect.

If one believes that general botany and general zoology are of value to the student of pharmacy, a logical query is: how much of each? Another pertinent question arises: could they be given better as one course, biology? To answer the first question, I believe that one semester of general work in each is adequate for our needs. There is at least one dean who feels that a year of each should be required. Instead of this, a semester of each and an additional semester of specialized work in botany and one in zoology would be more valuable in pharmacy.

The substitution of a year in biology for a semester of botany and one of zoology has much to recommend its serious consideration. For beginning students, the similarities between life processes in plants and animals are more important than the differences. Cell structure and function are alike in plant and animal. Reproduction in the two is a parallel study. The laws of heredity are identical in the two disciplines. The principles of classification hold true for both. Geography, paleontology, and evolution are best learned when plants and animals are considered simultaneously. It is utterly impossible to discuss animal ecology without constant reference to plants. In fact, if one is to include anything other than the structural details of type forms, plants and animals are studied better together than separately.

From what has been said it can be seen that in the writer's opinion the needs of a pharmacist can best be filled by an introductory course in the principles of biology given throughout the freshman year. If this is done, time will allow an adequate discussion of the neglected phases in addition to ample treatment of the conventional aspects of botany and zoology. From personal experience I believe that a gain in time of about one-third of the academic year can be made by treating the two subjects together in their many similar phases. This means that more free time is available for the neglected fields.

A year of general biology of such comprehensive scope cannot include sufficient details entirely to prepare the student for physiology, pharmacology and biochemistry on the one hand, and pharmacognosy and drug analysis on the other. Neither does general zoology nor general botany properly pave the way for these specialized courses. A semester of sophomore zoology and one of sophomore botany following a year of substantial work in general biology will, however, give a basis comparable to that now given for advanced work in chemistry.

The semester of advanced zoology should consist of a study of the gross anatomy and histology of vertebrates, with enough embryology included to give an adequate conception of the origin of the endocrine glands. The laboratory work might well be centered on the cat, with a preliminary study of the dogfish as typifying the vertebrate plan of structure. A histological study of the organs should parallel

the gross dissection. With the anatomy of the cat clearly in mind, the student would be prepared to understand the work given later in physiology, pharmacology, and biochemistry.

The semester of advanced botany should consist of much of the morphology now given in pharmaceutical botany, and might well include enough plant physiology and ecology to furnish a background for work in drug analysis, plant chemistry, and the culture of medicinal plants. This should equip the student adequately for advanced work in pharmacognosy.

The two years of biology that have been outlined are needed at the present time to give a biological basis for an understanding of the junior and senior courses now present in the pharmaceutical curriculum. If, as some believe, the pharmacist of the future is to be trained to give technical service to hospitals and other public health agencies, it may be necessary to require courses in microtechnique and parasitology. If some are to qualify as specialists in the field of drug plants, they should receive additional training in plant physiology and plant ecology. For the present, however, the needs can be met by two years of biological training along the lines suggested, but not by less.

Up to this point I have purposely avoided any reference to the cultural aspects of biology. No one denies the cultural value of botany and zoology, or of pharmacognosy and pharmacology for that matter, but few have attempted to tell what they mean by cultural values. At recent conferences attended by national leaders in the field of professional education, engineers, pharmacists, dentists, physicians and lawyers, there has been much thoughtful discussion of the need for a cultural approach to vocational education. Here again these men find it difficult to explain what they mean by a cultural approach.

If by culture we mean what Mathew Arnold meant, the acquainting ourselves with the best that has been known and said in the world, we find ample reason for including the neglected aspects of biology in our principles course. A student who has finished biology should be acquainted with the work of Mendel and his modern successors in the field of genetics. To complete his course and know nothing of what the names Lamarck, Wallace, Darwin, and Huxley

stand for certainly is not acquainting himself with the best that has been known and said on a topic of vital interest.

If by culture we mean the training and refinement of mind, tastes, and manners which comes from contact with persons of similar training and refinement, the problem is slightly different. The need is for a more careful selection of teachers, for a finer regard for these qualities in those with whom our students come in contact. If a teacher is of such character that he inspires emulation of his personal traits and habits, it matters little in what discipline he instructs.

Whichever meaning is applied, the biological sciences are definitely cultural. None can be held conversant with the broad aspects of science who does not understand the workings of the animal body or something of the world of plants. In many phases of biology, a teacher of refined nature is essential if the facts are to be presented in their true light and seen in their relationship to the pattern of life as a whole. Perhaps still different meanings are implied by others in speaking of culture, but until a more specific application of the term to vocational training is given, many will continue to think of cultural aspects as here depicted.

To carry out a program designed to strengthen the pharmacy curriculum at one of its weakest points—deficiency in biological groundwork—there are certain specific needs. The courses required must be adequately given, not by professors of pharmacy, not by instructors in pharmacognosy, not by chemists, but by trained biologists, preferably with an understanding of pharmacy. The courses cannot be given adequately without a sufficient allotment of time for recitation and laboratory. For the two years of biology outlined, three hours recitation and six hours laboratory instruction each week are needed. They cannot be given without proper equipment and supplies. A principles course in biology requires more material for proper presentation than does the type-form dissection type, which may be one reason why some have opposed the adoption of the principles method.

To summarize briefly, one of the weakest points in our present pharmacy curriculum is the lack of adequate training in the biological sciences. Much of the rote memory work in certain advanced courses is traceable directly to this deficiency. What a student does not understand he must memorize if he is to pass the course. The remedy consists in the

introduction of a year of general biology, preferably of the principles type, followed by a semester of vertebrate anatomy and histology, and one of plant morphology and physiology. The arguments in favor of a freshman and a sophomore year of biology are of two types, the need of this groundwork for an understanding study of advanced subjects and the less tangible but no less real cultural gains to be obtained from biology. Until pharmaceutical educators recognize the need for and are ready to introduce substantial work in biology, in many cases courses the upper-class students will continue to memorize rather than understand, and the curriculum as a whole will have a vital weakness in its foundation.

The Obligations of Pharmacy to the State and the Obligations of the State to Pharmacy*

ROBERT C. WILSON

School of Pharmacy, University of Georgia

Professional practice implies specific training along some definite line, and special fitness. Special fitness involves, in addition to the specific technical training, the highest possible type of character, of honesty, of integrity, and the necessary qualifications of temperament.

The practice of a profession is made possible through the granting of a franchise on the part of society which distinguishes a professional practitioner from a layman.

Any profession operating under its franchise abrogates to itself certain rights, privileges and prerogatives, and tacitly assumes certain responsibilities in return for the grant of its franchise. A profession, if it functions as such in the highest and noblest interpretation, must perform certain spiritual functions which are not a part of lay activities. It debases itself if the desire for material gain becomes its controlling motive at the expense of its responsibility for service to the state or to the society by whom its franchise has been granted.

Real service of the type of which I am talking is not that cheap commodity which has become the advertising slogan

*Read before Alabama Retail Druggists' Conference, Auburn, 1937.

of so many business activities, but, on the other hand, is that quality or function which is prompted by some inner and sacred urge to contribute some word or deed which would restore hope, renew faith, or direct ambition in one of our fellows; and, bringing him back from the abyss of despair, or, pointing out to him the dangers in the course he is pursuing, save him for himself, his family and society. Whatever the amount or character of service which may have been rendered by other professions through the years, I am happy and proud to realize that pharmacy has not fallen short of its responsibilities for service in this highest and noblest sense. When it is realized that the pharmacists of any community come into intimate and personal contact with practically every citizen of the community almost daily, he comes to know the kind of life each individual is living. By the character of purchases, the pharmacist knows the habits of the citizens of his community. The drug store has come to be the meeting place for the entire population of the community, old and young, male and female, white and black, and the forum in which most of the issues of the day are discussed. Hence it follows that the entire population of your state and mine comes into contact almost daily with some pharmacist.

By reason of these many contacts and the character of them, the pharmacist has the opportunity for influencing the lives of the citizens of his community. Having this opportunity for service, it becomes his responsibility to qualify himself from the standpoint of character and from the standpoint of knowledge to influence his people out of destructive habits into constructive acts and thoughts.

You older pharmacists to whom I may be speaking, think back to the day when the drug store was more ethical in character than it is today, and most of you perhaps are thinking, as I speak, of some influence which has come from you and which was responsible for saving some one from physical, mental or moral wreckage. Most of you recognize and unwillingly grant that the spirit of commercialism which we have allowed to develop, has jeopardized the good opinion in which we were once held by our customers and friends. The laws of nature are closely paralleled by mental, moral, and spiritual laws. The law of the pendulum and its movement is familiar to all of us. It swings, describing a definite

arc within closely defined limits, and finally comes to rest. When I think of the pendulum as the principle applies to pharmacy, I think I see that the pendulum has swung to its widest possible arc and is now about ready to begin its return movement. I think I see that pharmacy, one of the oldest, if not the oldest, of the professions, is about to return to its own; and, returning, will perhaps have broadened its vision and increased its power to serve by reason of the excursions it has made into other realms of endeavor. May God grant that this day is not far removed, and that we, as pharmacists, may come into a deeper appreciation of our profession, a fuller realization of our opportunities, and an enlarged vision of our responsibilities for service.

If we would fully discharge our responsibilities for service to the people with whom we come in contact, we must more carefully select those who are admitted into the profession, if we would safe-guard its good name as well as to insure the proper character and type of service. That we have been negligent in this regard, no one familiar with the situation can deny, and the fact that pharmacy has not been accepted for its true professional worth is attributable to our lapses in this respect. It is such groups as this where we have the forward thinking members of our profession in contact with our pharmaceutical educators, that plans must be laid if we are to re-chart a course for pharmacy to follow in the future.

That we have been lax in regard to the qualifications of those admitted to the practice of pharmacy, and that we have been swept along with the current of materialism which has pervaded this age and that we have allowed our profession to be made the purveyor of many products of questionable character, I think no honest one of us can or would deny. The shoddy merchandising game which has crept so insidiously into our profession is responsible for attracting many undesirables both as individuals and as groups, who, seeing the opportunity to capitalize upon the good name of pharmacy, have not hesitated to do so; and, so long as this group is allowed to remain or their number materially increased it will constitute a menace to the good name of pharmacy and destroy our life.

To properly look forward, one must of necessity look backward, and it behooves us to do just this in considering any

plans for removing those practices which now prevail or to intelligently plan for the future based upon our knowledge of the past.

The practice of pharmacy has been, and must be increasingly so, primarily public health in character, and if I am not mistaken in the signs, the drug store or pharmacy of the future will be the center for the dissemination of information regarding personal and community health. I doubt if we have functioned as such in the past to our capacity when I consider that some of the merchandise we have distributed and sponsored constituted a direct fraud upon those we allowed to purchase it. In this respect, we have not played fair with the public, nor with the profession, nor with ourselves, but the day is almost upon us when truthfulness in regard to medicinal and related products will prove to be a factor to be reckoned with. This becomes your responsibility and mine to hasten the day when the layman can rely upon us for the truth regarding medicinal agents. I take it that the future is going to demand that the pharmacist shall be perhaps the most highly educated scientific man in his community, and will be selected not on the basis of his technical and scientific training alone, but, also from the standpoint of moral character, of personality, of general culture and of good citizenship. These men who are admitted to our ranks in the future beginning with the present four-year graduates, must be qualified to perform a definite scientific service in the various communities in which they locate and their drugstores or laboratories be the clearing house for scientific activities in that community. They must be qualified to intelligently and truthfully advise as to the character and proper use of medicinal agents; they must be so broadly trained from a scientific standpoint that they will be able to guide a community along all scientific lines; they must be qualified to do general diagnostic laboratory work and be able to render this service on a more efficient basis than now prevails and at a price within the means of the average man; they must qualify themselves along all public preventive as well as curative measures; they must qualify themselves to perform a similar service in the vegetable world since the diseases of plants and their treatment are not far removed from the health of man or animal. In short, the future pharmacist must have a knowledge of

chemistry, of botany, of physiology, of plant pathology, of public health, of all the basic sciences, and must be a cultured gentleman, a humanitarian, a good citizen, and a leader in all of the worthwhile affairs and interests of his community. When and if we carefully select only those of proper character who are to be admitted to our profession, and go a step further and purge our ranks of those without character and whose practices are unethical we will have taken a long step toward the goal the founders of our profession set for it.

I unhesitatingly and unqualifidely rank personal character and integrity as the first requisites of a professional man or woman. Education and technical training I place second, for it is impossible to conceive of a more potentially dangerous influence in society than a highly educated and technically trained person who lacks the fundamental elements of good character, of integrity, of humanitarianism, and of good citizenship. This is more particularly true with regard to scientific activities than of any other, for, if science would make itself worthy of the name, truth should be its sole guiding principle and it should be applied for the good of all mankind.

Sound forward thinking educational institutions have recognized some responsibility for pharmaceutical education, but in the majority of cases only in part. They have thought of pharmacy in terms of the practices they find prevailing in the average drug store, and have not had a proper conception of the professional activities of pharmacy due to the fact that our gaudy displays overshadow or mask the professional phases. They (the educational institutions) have asked the question and with all reason, "Why special training for that type of activity?" The result of this is, and it should be your concern and mine and of every one identified with pharmacy, that pharmaceutical education has been dealt with as a "step-child" and we do not find on our campuses pharmacy buildings of the type enjoyed by other professional schools, nor equipment, nor faculty personnel, nor opportunity for research, nor proper budgets for efficient operation even on the present restricted basis.

The highest function of any educational institution should be to prepare its graduates for service to the people of the state, rather than to give training to insure an in-

creased personal earning capacity. There is no greater field of service than that involved in the education of a people into a proper knowledge of the conservation of healthy minds and bodies, and there is no surer way of imparting this training than through the retail pharmacists of the state. Existing agencies, including our educational institutions, have miserably failed in this important field of service. In theory, at least, every graduate of our educational institutions should be an educator in the sense that he or she should carry to the people of his community who are less fortunate than he, the knowledge and inspiration he has or should have acquired. This is true to a greater degree if possible in the case of tax-supported institutions than those privately endowed, for tax money should be spent in the interest of all the people.

If pharmacy, even under the present restricted conditions, is already rendering a service to the people of the state (and no one who is familiar with conditions will deny this), and is capable of rendering a much broader service if given opportunity and support and encouragement, then there is a definite obligation on the part of the state to provide facilities for the proper training of our future pharmacists who, in turn, will be capable of rendering this broader and more efficient type of service.

The fact that the pharmacists of a state pay into the state treasury a larger proportion of taxes than is true of any other professional or lay group should be brought to the attention of our educational executives and a just and dignified demand made that a proper proportion of these taxes be allotted to pharmaceutical education so that its field of service may be broadened and that it may more efficiently function in the service of the people of the state; and thus aid in bringing into fulfillment the highest function of the educational institution, and that is to render a service to the entire people of the state through its graduates.

There should be on this campus and on the campuses of other similar tax-supported educational institutions, a building, properly equipped and properly manned which should insure to pharmacy a dignified place in the educational plans for a state and for a broader and more efficient service to its people. The cost and maintenance of such a building is amply justified by the taxes which pharmacy is contrib-

uting to the support of the state; and the development of the hundreds of research projects which come directly in its field would add materially to the prestige of the educational institution and to pharmacy, and constitute an addition to the scientific and economic welfare of the state.

An Aside To The President of Alabama Polytechnic Institute.

Mr. President:—

Speaking for the pharmacists of Alabama and for pharmacy throughout America, I bespeak your interest and that of other educational executives in giving pharmacy an opportunity to develop its potential power for service to the people of the state and nation and an opportunity to live a rich, full life.

A Study of Pharmacy Techniques

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The curricula of the schools of pharmacy are so arranged that there are repetitions of laboratory techniques and operations. The teacher of the beginning course is concerned in starting the student right. The courses in pharmacy are so related that the procedures gained in one course can be used in those that follow. The first impressions are usually retained over a long period of time. The students' interest in pharmacy is formed in the first year and it may often-times be a reflection of the instructor's interest in the subject. The teacher's concern should be in performing the task to the best of his ability and his reward will be the satisfaction of a job well done. It has been a problem for him to determine how much of the basic training is carried over into future courses.

In this respect, Charter's Report is worthy of consideration. It is accepted in pharmacy as a survey of the field and a great deal of knowledge of the needs of the student should be obtained from it. In the section on Operative Pharmacy it states that "A pharmacist should possess a general knowledge of the methods of manufacture and the physical properties of all preparations sold by him." This survey was made of pharmacy. The data was compiled from a study

of 17,000 prescriptions collected from all parts of the United States. It should be an acceptable estimate of the needs of the profession.

From this data one can see where many conclusions could be drawn as to the necessary techniques needed by the pharmacist. It states that "after the list of preparations was prepared the next step was to study them in order to develop what knowledge is needed to make them." Among the things listed are official English titles, synonyms, percentage strengths, and the active constituents. This same report states, "The pharmacist needs a very high degree of skill in the techniques of these operations and an accurate familiarity with the closely associated facts listed."

According to this report, "there is a mass of information and techniques which the student can learn in practice. This information can be learned best and most quickly under guidance. The pharmacist needs a very high degree of skill in the use of the various operations connected with compounding and dispensing of prescriptions and manufacturing those preparations recommended to be made in the operative pharmacy study." There is a question in the minds of many of us just where the student is to get this experience or practice. Many states do not require apprentice or drug store experience. The experience, for those who do not get it in drug stores, is gained in the schools of pharmacy under guidance of the instructors and teachers. Many of the students obtain their first touch of prescription work in the course in dispensing.

Repetitions in Techniques

A study of the content of courses will reveal a similarity in the type processes and techniques which are used in completing the work in the laboratory. The repetition in these courses is of great value to the student if he can be shown wherein they are related. We know the value of repeating and it has oftentimes seemed that we repeated certain directions until they had become rote but we must realize that students are pliable subjects who are being taught by many instructors. The instructors have ideas of performance and application which are, in part or as a whole, different from those of his colleagues. The question of whether a student should have a number of different instructors is debatable.

We know that a wider variety of experiences tends to educate an individual and because of this it is, perhaps, advisable for the wide range in courses.

The methods of the pharmacy teacher may not be those used by the chemistry or biology instructor, and the student may become confused as to which method is the correct one to use. The laboratory techniques and methods of approach are similar in the pharmacy courses because the student is usually under the direction of one professor or instructor. There should be a correlation in the pharmacy laboratory which could be measured.

This correlation should be measured objectively. There have been no tests or measuring sticks made for such a means of testing. According to Tyler, in his *Constructing Achievement Tests*, "adequate and reliable methods for testing the amount of information which a student remembers have been developed recently in many fields of subject-matter. Few tests are yet available for measuring the degree of laboratory skill attained by the students. The important problem in higher education is the permanence of learning. Early investigations of the learning of nonsense syllables showed a rapid rate of forgetting as soon as the learning exercises were discontinued. Studies of the retention of information acquired in college courses have been made in several universities, but no attempt has been made to compare the degree of forgetting which takes place with reference to the remembering of different types of material acquired by college students."

The Pharmacy Courses

The first course in pharmacy at Purdue University embraces a foundation in pharmaceutical arithmetic, Latin, and the fundamentals of pharmacy. The student becomes conversant with the United States Pharmacopoeia and the National Formulary. He is taught the use and manipulation of the working tools of his profession. In the first semester, he obtains instruction and training in the common technics which include weighing and weight systems, measures and measurements, the properties of liquids and solids, methods of subdivision, characteristic properties of solutions, methods of extraction and separation including percolation, distillation, calcination, incineration, and sublimation, and many other type processes of manufacture.

In the second semester he is given assignments which cover the manufacture of a number of official preparations which he will use in pharmacy. The technic of manufacture is the same for the beginner as it is for the more advanced student. He is beginning and is therefore not entirely conscious of what value the work will have on his future training. The student is made pharmacy conscious in the work because if his interest is developed at this time, there will be a greater amount of retention. He is interested in making preparations which are used in his profession and at this time the stressing of what the prescription must be and the care needed in its compounding should make a deep impression which may be permanently retained by the student.

The advanced courses are given in the junior and senior years. The student is assigned to one semester of prescription practice and one semester of manufacturing pharmacy. The question of the carrying-over of habits, skills, and technics from previous courses becomes an important one. In the course in prescription practice he is required to fill a large number of prescriptions which are not made for his special benefit. They are compiled from a large number of prescriptions written by physicians in the State of Indiana and elsewhere. The student is impressed with the variations and types of prescriptions which he is to fill.

The ability of the student to retain part of the technic of manufacture is soon apparent. It is usually necessary for the instructor to give aid to each student until he has again reclaimed the skill which he had obtained as a freshman student. The first part of every semester is given over to a review and application of the laboratory work of his previous semester. Those students who have become pharmacy minded do not find it very difficult to regain their ability to fill prescriptions. Some of the students have carried over many of the bad habits and their work is oftentimes sloppy and lacks that degree of neatness and finish which the pharmacist needs in his work.

In all courses of pharmacy the methods of manufacture are the same as those in the beginning course with the exception that the quantities of finished products are much greater. The student must apply the knowledge learned in the first year to the problems which arise in the advanced work. The skill gained in pharmaceutical arithmetic must

be used to enlarge formulas. His knowledge of weights and measures is needed in the measuring and weighing of his larger quantities. He needs his training of making changes from one system to another. The general laboratory technics of filtering, percolating, mixing, etc. are needed at this time.

The Value of Experience

We have found that the student who has had some drug store experience between his freshman and junior years will usually do a better job in the manufacturing of preparations than one who has had no experience. The one who has worked in a drug store has obtained certain values of the professional attitude which aids him in his work. He has gained a realization of the responsibility of his position or become pharmacy conscious. It is our observation that the student who has had this additional experience with the public will attack his problem with a degree of certainty, while the student who has not become pharmacy conscious will possess a degree of fear and uncertainty. The finished product may be of an equal quality yet the amount of time consumed in its manufacture will be considerably different.

Applications of Technique

An example of how the student may apply his previous training and experiences to new situations is clearly shown in the manufacture of tablets by machinery. He has had no experience in this definite assignment yet he has had all of the experiences needed for its completion. The problem is analyzed by the student in the light of these situations. The weighing of the quantities and mixing of the ingredients are the same as those used by him in his first year. The granulation of the powder can be compared with the granulation of effervescent salts. The new problem is the compressing of the tablet. He is now able to apply his experiences of the manufacture of tablet triturates to this new problem. The questions of pressure, disintegration, appearances of finished product, etc. are the same as those of the former problem.

Another example of laboratory technique is found in the manufacture of emulsions. He is taught the procedures and the need of care in manufacture, yet he does not fully realize just why these things are necessary until he has homogenized an emulsion. He is able to see the finished product under

the microscope and can compare the hand-made emulsion with the one made by machinery. He sees the difference in the size of oil particles and the differences in texture of the finished product. The keeping qualities of the two emulsions are stressed at this time.

The methods of filtration, measurements, etc. are used by the student in the pharmaceutical chemistry courses. The analytical courses require the use of the analytical balance and apparatus commonly used by the pharmacist. His methods of solution, precipitation, and decantation are used in the qualitative analysis laboratory. The course is based upon precipitation, solubilities, and separation of component parts. He is taught the methods of chemical reactions and how to recognize the changes which occur. The characteristic properties of inorganic solids used in pharmacy are explained to him. He is given techniques needed in his future work in pharmacy.

He uses his qualitative analysis training in the study of incompatibilities found in prescriptions. From his training he should be able to recognize any change which might occur in compounding. The problem of ointment manufacture is again brought to his attention and he now understands why he was directed to use a bone spatula in place of one made of iron. The chemical changes which occur in the manufacture of ointments containing idoine, mercury, benzoic, or salicylic acid when an iron spatula has been used will show in the finished product. The responsibility, training, skill, and technique needed in the practice of pharmacy becomes something real at this time.

In the prescription practice laboratory a large number of incompatible prescriptions are studied and the student is able to apply the qualitative work to this course with a degree of understanding. He is more able to realize the care needed in filling prescriptions containing alkaloids and their salts. Numerous other phases of a similar nature could be cited.

There are many situations and experiences gained in the beginning courses which can be related to those used in the advanced work in pharmacy. A more complete correlation of techniques could be worked out if a series of tests or measurements were made and then applied to both the beginning student and those with advanced training.

The Scientific Approach to Problems of Administration and Guidance in the College of Pharmacy

By

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For the past three years the entering class of the College of Pharmacy of the University of Minnesota has been given a battery of achievement and aptitude tests with a view to discovering whether it is not possible to discover before a student begins the study of pharmacy what are his chances of being able to succeed in his courses. For each individual, the results of each test and the average marks made by the student in high school have been compared to his subsequent average mark in the College of Pharmacy. On the basis of these data, it has been possible to predict the student's subsequent degree of success in his classes with startling accuracy.

The diagram below is illustrative:

EARNED AVERAGE

		Lowest	Next low-	Next high-	Highest	Total
		Fourth	est Fourth	est Fourth	Fourth	
Predicted Average based on high school average and reading ability tests	Highest					
	Fourth	0	2	4	6	12
	Next high-					
	est fourth	0	3	5	4	12
	Next low-					
	est fourth	2	5	3	2	12
	Lowest					
	fourth	10	2	0	0	12
	Total	12	12	12	12	48

Prediction made on the basis of high school average and scores on science survey tests and pharmacy mathematics tests.

The diagram is to be interpreted as follows:

On the basis of high school average marks and test scores the group of 48 students was divided into four sub-divisions

of equal number on the basis of their predicted rank. Of the twelve poorest prospects, ten actually were in the lowest quarter at the end of the first year as judged by the average mark by the instructors, and the other two were in the next-lowest fourth. In other words, if all twelve students had been denied entrance, only two satisfactory students would have been lost and neither of these were as good as the average of the first year class. Perhaps it may not be wise in all cases to discourage the lowest fourth of all students who come to our college since they constitute on the whole a fairly able group. But we are able now to discourage a few of the poorest prospects certain not to be successful and to give to the others of poor promise guidance and individual attention, thereby increasing the number who will be successful in the pursuit of their studies.

It is particularly encouraging to find, although the batteries of tests employed have not been uniform in the three years of experimentation, the accuracy of prediction has been satisfying each year. With the first year class The Minnesota Reading Test, the Johnson Science Survey Test, and an arithmetic test was employed. The coefficients of correlation between the various predictive factors and the average mark in pharmacy are given below:

High School average	.614
Minnesota Reading Test	.608
Johnson Science Test	.247
Mathematics Test	.261

When the high school average and the Minnesota Reading Test scores were combined the multiple coefficient of correlation was found to be .765. The accuracy of prediction yielded by the coefficient is illustrated by the diagram given on the preceding page.

With the second experimental group, the class entering in the fall of 1934, the following coefficients were found:

High school average	.545
Revised Science Test	.538
Minnesota Reading	.354
Iowa Chemistry Test	.522
Mathematics Test	.498

The increased prophetic quality of the mathematics test may be attributed to the fact that the test used the second year was prepared especially to test the ability to apply

arithmetic to pharmaceutical problems and was devised by Professors Rogers and Bachman of the College of Pharmacy and Professor Douglass of the College of Education.

If high school average, the science survey on the Iowa Chemistry test, and the mathematics test scores are all employed to predict success in the college, multiple coefficients around .75 are obtained.

With the third group, the entering class of 1935 still a different combination of tests was employed. The resulting coefficients of correlation with average marks were:

High school average	.514
Pressey intelligence test	.290
Science Survey test	.598
Mathematics test	.478
Reading comprehensive	.567

Various combinations of three predictive variables yield multiple coefficients of correlation of from .70 to .74.

To picture more correctly the accuracy of prediction the following table is presented, showing in one column the rank predicted for the student and the rank actually achieved. The lowest and best ten only are shown here.

Student	Predicted Rank	Actual Rank
E.O.	1	1
N.O.	3	2
I.R.	11	4
R.M.	20	5
J.D.	15	6
W.E.	32	7
W.H.	8	8
S.C.	6	9
R.K.	22	10
B.K.	38	38
A.B.	10	39
B.K.	42	40
K.A.	40	41
C.E.	41	42
M.L.	44	43
N.S.	29	44
C.C.	45	45
J.D.	43	46
K.O.	47	47

These predicted ranks were based on high school average and scores on science survey tests and pharmacy mathematics tests. It is interesting to observe that with one

notable exception and one other medium discrepancy the somewhat deadly accuracy of predictions in the lower levels.

One may be assured that no device will ever be developed which will enable one to predict accurately what given individuals will do in the way of making good marks. The marks themselves are not fully reliable and valid measures of student progress. It is certain that some students will fall far short of their possibilities and that many will either fall slightly short or do slightly better than ordinarily may be expected of those of their ability. For this reason it is certain that the means of prediction which we have employed at Minnesota are more accurate measures of the students' actual abilities than is indicated by the coefficients of correlation obtained between the predicted success and the actual marks received, even though as has been demonstrated, the correspondence has been very substantial.

Since 1890 the number of young people going through high school has doubled every ten years. In 1900 one child in twenty graduated from high school. In 1936 one in three are graduating. This has made eligible for college entrance every year hundreds of thousands of young people annually of such mediocre ability that a generation ago would never have finished high school. The better professional schools—of medicine, dentistry, law and pharmacy—must either lower their standards of instruction or be prepared to turn away those who will not finish the course for lack of ability. Already the schools of medicine and law have moved in this direction. Schools of pharmacy should begin to study the problem and develop the best techniques, based upon scientific investigation.

Professor Douglass has suggested that if a number of the larger schools of pharmacy would co-operate in the project, he would be very glad to assist them in drawing up a more or less national research project involving such schools. He believes the chances are good that if we would approach one of the larger foundations such as the Rockefeller Foundation for the Advancement of Teaching, that they would provide ample funds for carrying on a cooperative investigation in a score or more of institutions. The Association of Medical Schools has already been engaged in a similar project.

At Minnesota, our relations with Professor Douglass in our investigation, have been mutually very satisfactory. He

has given us generously of his technical training and experience in the investigation and has at all times given us ample credit for our efforts or contributions to the study. Similar studies are being carried on in all the professional schools on the campus and a general recognition of the attractive possibilities of such a field of investigation is felt throughout the institution.

Already in our school, we have begun to employ the data made available by our testing program. In some instances we have investigated the cases of students of good promise and poor performance and have been able to diagnose the cases for the source of difficulty. In a few instances, it has seemed desirable not to encourage students of poor performance and poor promise to remain longer in the school to burden our faculty and to continue what is for them an unprofitable investment of time, effort and money.

Just as guess work and rule by thumb even by experts has given way in many other fields to scientific measurement and investigation it seems almost certain that in some aspects of college administration and guidance, procedures will be validated and perfected more and more on the basis of precise and careful investigation.

Some Thoughts on Examinations

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Centuries of academic mind-searching have developed a system of examinations to determine the amount of control the teacher—used in the broad sense of the word—has had over the thought processes of the pupil. Every thoughtful student of the system is aware of many weaknesses. It has become apparent that too often the examination merely measures the power of a student to give back stereotyped answers to equally stereotyped questions, or as one teacher aptly put it, “measure the ability of the student to transfer information from the teacher’s notebook to the examination paper without going through the heads of either teacher or student”.

Workers in the elementary grades have, perhaps, made the most thorough study of the inherent weaknesses of the old and newer methods of examining. In discussion-type questions it has been recognized that frequently it is the

ability of the student to express himself that is at fault. To attempt to overcome this fault, the multiple-choice, true and false, completion tests and the like have been introduced. Tests of these types have the advantage of time and clarity to the student if well thought out by the instructor. They have two disadvantages, however: their preparation takes longer time and considerably more thought than the conventional tests; and if not carefully prepared, may at times become ambiguous.

Then there is the question of grading the examination. The variation among teachers grading the same examination is surprisingly great. Orleans and Sealy¹ have given an interesting example taken from the elementary system. An arithmetic examination was given to 7th grade pupils and the papers were then graded by 37 different teachers. These teachers varied from 45% to 75% in their estimate of the value of those papers, this in spite of the fact that 10 out of the 15 questions given allowed no partial credit, the answer being either right or wrong. In a physiology examination given the same students, the question was asked, "Why should the handkerchief be used to cover the nose and mouth when sneezing and coughing?", to which one student replied, "The handkerchief should always be held over the mouth and nose when sneezing or coughing because it helps the germs from coming out". This answer was worth 12½% if correct. Table I indicates the grades the various teachers gave the answer.

TABLE I
VARIATION IN MARKS ASSIGNED BY DIFFERENT TEACHERS
TO A PUPIL'S ANSWER TO TEST QUESTION

Mark (%)	Number of Teachers
12½	6
11	..
10	20
9	1
8	6
7	1
6	9
5	..
4	..
3	1
2	3
1	..
0	6

¹Orleans, J. S. and Sealy, G. A., "Objective Tests", World Book Company, Yonkers, New York, 1928.

It is interesting to note that some teachers thought that the answer was worth nothing, presumably due to incompleteness, while other teachers gave it full value. In other words, in some schools this student would have been virtually an honor student while in others he might be a failure. One can feel sure that there would be about as much variance if a similar test were made with college teachers. This grading variance becomes exceedingly important in the larger universities where several student markers and instructors grade the papers.

The question naturally arises then as to what the examination should measure. Before the student can do any reasoning, he must have facts with which to reason. He must know certain chemical and mathematical formulas and he must be thoroughly familiar with the terminology of the field. So part of the examination must be set up to determine whether the student possesses a reasonable number of these fact-tools. The author personally believes that, in general, this portion of the examination should be set up in the form of multiple-choice questions or the like.

In addition to facts, the student must possess a knowledge of fundamental ideas and generalizations. Here the important thing is not whether the student can "parrotize" an academic rule, but whether he really understands that rule and its applications. If the generalization lends itself to mathematical analysis it is advisable to give a problem. To be more specific why not, rather than ask the student to discuss prescription pricing, give the student a prescription and the cost of its ingredients in the units usually obtained on the open market and ask him to calculate the selling price of the prescription, defending his reasons for the various service charges.

The third factor which should be measured is the ability of the student to reason from given situations. Give a student the salient facts and then ask him to draw conclusions from those facts. Consider the following:

"Varying amounts of the enzyme invertase was added to a 4.5% solution of sucrose at pH 4.4 and the time required to bring about 75% hydrolysis was established. The following was found:

Rel. Enzyme Conc.	Time in Minutes Required to Hydrolyze 75% of the	Time Required in Presence of 0.001 M
	Sucrose	NaBr
0.25	120	150
0.50	60	30
1.00	30	60
1.50	20	50
2.00	10	30
2.50	5	20

After each of the following statements place the figure 1, 2 or 3 to indicate whether (1) it is a reasonable interpretation of the data, (2) it might be true, but there is not sufficient evidence to support it, or (3) the data contra-indicates it:

- Hydrolysis of sucrose is increased by an increase in the pH.
- Invertase is capable of hydrolyzing only 75% of a 4.5% solution of sucrose at pH 4.4.
- The velocity of the above reaction is directly proportional to the enzyme concentration.
- The velocity of the above reaction is directly proportional to the substrate concentration.
- Raising the temperature increases the velocity of enzyme reactions.
- Enzymes increase the velocity of reactions according to their concentrations.
- The presence of electrolytes has no effect on the hydrolysis of sucrose by invertase.
- Cyanides inhibit invertase activity.
- High concentrations of enzymes do not follow the proportionality rule strictly."

It would be interesting to test a group of Freshmen on these three factors and then follow their progress from time to time during their school careers. One would expect that as time went on, the student would improve his store of facts and his technical vocabulary greatly, that his knowledge of general principles would undergo intermediate change, while his ability to reason "scientifically" from given situations would change rather mildly.

In closing, let it be said that there is no system which is complete in itself. This is not a plea for a complete change in methods, rather it is a plea for a more serious study of the examination. It must also be remembered that this discussion has limited itself to examinations to measure the student and has not included methods to measure the teacher's pedagogical ability which is a "Ding an sich" and equally important.

Who is Responsible for What is Bad in Pharmaceutical Education?

EDWARD KREMERS

The University of Wisconsin

It may seem unkind to members of State Boards of Pharmacy to be told that they are responsible for much that is positively bad in pharmaceutical instruction. Yet such is unquestionably the case. Not that board members are willfully degrading pharmaceutical education. Many of the older members had never been in college. Many of our present board members have been out of college for twenty-five years and longer. What is more, the almost universal drift toward commercialization of the calling has forced them to devote most, if not all, of their time to commercial problems, hence has allowed little time for professional development and no time whatever for keeping abreast with the development of the sciences which constitute the foundation of the art and practice of pharmacy. Yet in every state members of boards prepare questions in chemistry, botany, materia medica, etc. That many of them make use of guides in formulating their questions alters the situation but little. Unfortunately, these guides are written down to the level of older state board members and not up to and abreast with modern developments of the respective sciences.

A few illustrations may suffice to make clear the above statement. Only recently the writer asked one of his graduate students, a member of the pharmaceutical faculty of a neighboring state university, how he treated the subject of oils in his undergraduate classes. His reply need not be quoted at length. Suffice it to state that whereas he endeavored to treat the subject as scientifically as possible, he had to make concessions to his state board, for his students were supposed to be able to pass the board examinations. They could not, however, pass these examinations unless he gave them definitions of terms that were wholly unscientific. In other words, expediency demanded that he teach them scientific untruths. This may seem a harsh statement, yet it is only too true.

This graduate student's statement did not surprise the writer. Having glanced over state board questions from time to time for half a century, he has only too often observed

questions that implied erroneous answers. Having referred to oils, it may be permissible to recall a question that has occurred only too frequently, viz. the question as to the classification of volatile oils that implied the answer: (1) hydrocarbon oils, (2) oxygenated oils, (3) those containing sulphur, and (4) those containing both sulphur and nitrogen in addition to carbon and hydrogen. This classification was proposed almost a century ago when elementary analysis was first being applied to the study of volatile oils and when little else was known about them. Though both question and answer have been obsolete for half a century, the question is still asked and teachers regard themselves forced to teach the obsolete answer. Certainly a waste of precious time so far as both student and teacher are concerned. Unfortunately, teachers are only too often judged by the percentage of their students who pass the state board, hence many a teacher lacks the courage to refuse to impart unscientific information though he may do so reluctantly and even with a rebellious spirit.

If you regard my criticism of state board members as severe, you will permit me to be even more severe in the criticism of my teaching colleagues. Let us pass for the time being their lack of courage when they submit to what they know to be wrong. Considered from the ethical point of view, this may be the worse failing, but as one who for a long life time has had to battle with state board requirements, I can at least sympathize with those of my colleagues who submit to the tyranny of outside pressure.

There is another group of teachers who, no doubt, are not so very different from state board members in their attitude toward the advancement of science and the obligations which it imposes upon them. Just as the average registered pharmacist is apt to forget about science after he has passed the state board examination, so there are teachers who are but indifferent students after they have attained their full professorship.

The days when a Maisch could be professor and dean as well as pharmaceutical practitioner, also secretary of the American Pharmaceutical Association and editor of the American Journal of Pharmacy, are past. True, he was an exceptional man even for his days. But Maisch was not educated as a scientist or even trained as a pharmacist in his

youth but as a watch maker and jeweler. As an autodidact he possessed a most remarkable fund of factual knowledge; but facts alone, no matter how numerous, do not make science.

Having attended faculty meetings religiously for a quarter of a century, the writer found life too short to continue to attend meetings that had degenerated to rubber stamp affairs or quibblings over pedagogical details and matters of student discipline, including athletics. As a member of the Association of University Professors since its foundation, he had not attended a single meeting of the local chapter until recently. There was to be a dinner and after the repast the subject of specialization was to be discussed.

Thinking that such an informal discussion by colleagues from which administrators were excluded, might be very different from an ordinary faculty meeting, the writer decided to attend. The first speaker, a representative of the humanities, treated the subject generally and from the point of view of a teacher of language and literature. His presentation was excellent. The second speaker, a representative of one of the sciences, admitted that he knew nothing about the subject so far as the humanities were concerned, but he felt sure that so far as his science came under consideration, the graduates had to have a lot of the subject and then more in order to hold their jobs. The next day he admitted to an immediate colleague that whereas Professor so and so had used some fine words, he, the scientist, did not understand what his literary colleague had talked about. Unfortunately, this was true not only in this instance, but is true in many other instances. The teacher of science, and the teacher of applied science is no exception, only too often does not understand the language of the ideals of a liberal education.

In this connection the writer is reminded of a statement made by a former dean of our College of Engineering: "We do not pretend to educate or train engineers, but men with a capacity to become good engineers." Unfortunately, this is not the guiding principle of all teachers of pharmacy, hence they are not only willing to stoop to the level of the average state board examination, but their own examination questions are as similar to board questions as one egg is to another. I recall acquaintances among my teaching colleagues as well as among state board friends whose ideal of pharmaceutical education was the ability to turn out a perfect batch of pills

or suppositories, or to prepare a difficult emulsion. Today even this pride in the art of pharmacy appears to have vanished in the rarified atmosphere of commercialized pharmacy. Now state associations pay a speaker three hundred dollars and his expenses for words, mere words on salesmanship which they might purchase in book form for three dollars. If a generation ago, the teacher who took his science seriously was denounced as too theoretical, today he is criticised for not being sufficiently commercially minded. The teacher, who, like the weather vane, will change his convictions as educator—if he has any—with every shift of the popular pharmaceutical wind, is the one praised for the interest he takes, not in professional pharmacy, but in the drug business. Neither he nor the commercially minded pharmacists, who sing his praise, are aware that they more than the economic depression are killing even the drug business.

If, in the opinion of my state board friends, I have been overcritical of the position they take in conducting examinations, because in my opinion they lower the standards of pharmaceutical education, I now must fear that my colleagues in the colleges of pharmacy will accuse me of being even more severely critical of their attitude. If I am, it is not because I regard myself as a model of perfection, but because I, fully realising my shortcomings, never the less refuse to follow false educational gods, but strive forward toward an ideal worthy of attainment though not attainable.

Whether you regard my criticism as fair or not, you have a right to demand of me a remedy after having made my diagnosis. The fact that the remedy may not be applied during my life time does not prevent me from proposing it nevertheless. I am not only willing but anxious that the pharmacists of the several states should enjoy the greatest amount of professional home rule, fully realizing that democracy in whatever form demands its price. Yet I believe in democracy and scorn the ideal of autocracy demanded by so many of our druggists when only a few years ago they clamored for a pharmaceutical czar. I have no use for the dictator in pharmacy any more than in politics, be he of the older type of the Czar, or of the newer type of a Stahlin, a Mussolini, or a Hitler.

As my old friend James H. Beal once remarked: "All progress is made through compromise." I am willing to com-

promise as to unessential details, but I refuse to compromise my principles. Innumerable compromises may be effected by others before my ideals are attainable, but that is no reason why I should be false to them. Hence, the remedy I propose may not be applicable tomorrow, or the next day, or the day after next, but it is bound to prevail.

As stated, I trust that American pharmacy may not lose more of its home rule than it has already lost, but regain lost territory though possibly under different circumstances. I would wish, therefore, that our state boards of pharmacy may continue if not as such independently, then as sections of general boards of health and sanitation. But this need not imply that they themselves must be examiners. Rather, they should select examiners from among those who have specialized in education, also retain the final word of approval or disapproval. I would even go a step farther; I would abandon the question and answer type of examination largely if not entirely, and substitute therefor a more rational procedure of ascertaining the fitness of a candidate. Already our National Civil Service Board is showing the way. This Board does not presume that its members or even its specially appointed examiners can judge of the qualifications of a candidate by stereotyped answers to stereotyped questions. It does not even assume that its examiners, no matter how well qualified, can judge as competently after an oral or written examination of an hour or two, as well as can ten, twenty, or forty instructors who have met the student daily for a semester or more during the four years of his undergraduate quadrennium.

Faulty as our educational system may be, full of imperfections as may be our educational methods, I yet believe, and believe firmly, in education. This need not and should not imply that collegiate education is the only factor in the development of young men and women. Important as it is, permit me to close by quoting a statement made by the late President Theodore Roosevelt at a university convocation: "The college graduate is not necessarily better than the self made man, but he should be better for his four years on the college campus than without them."

Both Sides of the Fence*

THE BOARD OF PHARMACY
of the
State of New Jersey

For ten years the Board of Pharmacy of New Jersey has been participating in these district conferences. We can recall when they began and we have vivid recollections of the harsh and unreasonable criticism to which boards of pharmacy in general were then subjected for the large number of failures of applicants for registration. There was little or no criticism of the courses of study or the preliminary education and general fitness of those who applied for registration. It was assumed that anyone completing a college course successfully must be equipped to qualify for registration. If there was anything wrong, it must be with the board examinations or with the examiners. All the rotten apples in the college back yard had been tossed over the fence into the back yard of the boards of pharmacy.

Gradually, year by year, the board questions and the board methods have been subjected to microscopic analysis by joint committees of college professors and board members and one by one the rotten apples have been tossed back across the fence until it seems to us at this time that the college back yard needs some attention. In the process of tossing the apples much has been learned and the people on both sides of the fence have come to realize that there should not be any rotten apples in anybody's back yard. More important than that is the lesson that as far as pharmacy is concerned, you cannot clean either back yard permanently by tossing the apples from one to the other. They must be tossed out of both.

These district conferences have taught us that both groups must join in the cleaning process. Just now it appears to us that the cleanser is more badly needed in connection with the educational process than with the examining process.

Our board, as individuals and as a group, has given much thought to this problem in the past year. It has been the subject of lengthy discussion at our meetings and the sub-

*Read at the meeting of District No. 2 in New York City March 9, 1937 by John J. Debus, member of the Board. Published at the request of the Editor.

ject of considerable research in our office. The thoughts here advanced are the composite views of our entire group based on actual facts and figures made available to us from various sources. Some of these have already been covered in detail in our report on examination statistics. Therefore, this paper is presented not as the work of one individual but as the combined effort of all.

We see four major problems which require immediate attention:

1. There is the problem of selection of personnel for the profession.
2. There is the problem of providing proper education and training for the professional personnel.
3. There is the problem of providing for that personnel an adequate opportunity to exercise the professional function for which it is trained.
4. There is the problem of stimulating public appreciation of the value and necessity of proper pharmaceutical service.

One member of our Board (John J. Debus) has expressed himself forcibly to us on the first two points. Here is a summary of his views:

"State board of pharmacy examiners have before them each year a new crop of candidates for licensure to practice pharmacy. These unsuspecting individuals are led to believe that they are qualified to practice this time honored profession because of the assurances they received from colleges that they have been educated to meet the qualifications. Accurately compiled statistics presented to this conference year after year indicate that somewhat more than 50% of state board candidates fail to achieve success at examinations. Intensive investigation and study of the problem show more and more clearly that the reasons for this high rate of fatality are not to be attributed to state board examiners. It appears clearly evident that the high percentage of failures is caused by the poorly qualified candidates presented for examination.

"This condition will continue to exist as long as colleges of pharmacy are permitted to go into the highways and byways of society, enlisting young men and women into their student body under the false pretense that they will receive an education which will permit them to become registered

pharmacists without any effort on the part of colleges to determine or predetermine whether or not these young men or women have the necessary qualifications to successfully withstand exposure to the education offered. It is, in my opinion, clearly evident that too many individuals who are graduates of colleges of pharmacy should never have been permitted to have entered the course.

"Public education, undoubtedly, is entitled to its share of the blame. It is an undeniable fact that what is purported to be a high school education today does not, by far, measure up to what it was originally intended to be. Young men and women are dismissed from high schools, graced with a diploma and provided with credentials certifying that they have successfully completed four years of high school. This, in order to make room so that other hordes of young men and women, may be accommodated with a politically dominated compulsory education which the tax-payer can ill afford to pay for. They are passed on to society without even the basic fundamentals of an education which would permit them to withstand exposure to a pharmaceutical education. During their high school careers they have never been introduced to what even approaches good manners, which is the basis of all ethics, and this sad omission, I am sorry to state, is carefully neglected in our colleges of pharmacy.

"Feeling confident that those in charge of colleges of pharmacy are fully aware of this serious handicap in public education, I believe that some of our American colleges of pharmacy are guilty of accepting money from unsuspecting individuals under the promise that they will produce something they full well know they cannot produce.

"One of the chief responsibilities of state boards of pharmacy is to protect the citizens of their respective states against unqualified practitioners of pharmacy. This responsibility has not yet been successfully discharged by boards of pharmacy because the unqualified candidates, who represent the fifty percent of failures, are permitted to take the examinations time after time and eventually do succeed in passing. Every effort has been made by boards of pharmacy to successfully discharge the responsibility of restricting the practice of pharmacy to those qualified, by enacting laws which raised the educational requirements of candidates

for licensure with the hope that such higher standards of education would provide better educated and more competent candidates. Colleges of pharmacy have not, however, cooperated with these aims of boards, but have merely complied with the strict letter of the laws, completely ignoring their spirit. In spite of the fact that a decade or more of experience with these higher educational requirements have not changed the status of candidates with regard to success at state board examinations, colleges have made no effort to correct this situation except to turn the heat on the boards.

"Acceptance by colleges of legislation which restricts the education of pharmacists almost entirely to colleges and almost completely eliminates the preceptor of the past, brings with it the responsibility of supplying qualified candidates for licensure. Since colleges have shirked this responsibility, it now appears that the boards must face their responsibility in another direction by demanding that colleges produce better qualified candidates for examination. Since the issue must be faced squarely sooner or later and the kind of pussy-footing that has gone on for the past few years only postpones the final day of judgment, I recommend that this Conference take such action as will bring about the correction of this evil. To this end, I suggest that the boards of this district requiring high school education or its equivalent as the college entrance requirement, immediately resolve that candidates must have had a general average of not less than eighty during their four years of high school. I also suggest that a joint committee be appointed to consider aptitude and fitness tests for college students to be applied to them after completing the first year of college."

In support of the position that colleges of pharmacy have accepted tuition fees without returning full value, we may cite the admission of the large percentage of individuals who would not have been recommended for college training by the principals of their respective high schools. We may further cite the fact that in one school in six years out of seven the receipts from student fees alone exceeded the expenses for salaries, wages, supplies, equipment, operation maintenance and other expenses by more than \$30,000 in one year, by more than \$26,000 another year, by more than \$25,000, \$23,000, \$13,000 and \$7,000 respectively in other

years, thus readily providing for the little more than \$5,000 deficit in one year out of the seven.

In the recent standards for accreditation of colleges of pharmacy proposed by the American Council of Pharmaceutical Education, it is stated: "It is desirable that at least half of the income should be derived from stable sources other than student fees, i. e. permanent endowments, state appropriations etc."

We believe that the purpose of this standard is to assure good teaching regardless of the number of students enrolled, and it calls to our mind a certain paper presented before the New Jersey Pharmaceutical Association in 1925 by our secretary in which he stated that unless endowments or state aid are provided for colleges of pharmacy, necessary improvements must be curtailed, all applicants for admission who can be accommodated must be accepted without regard to their fitness for the profession. We quote from this article not only because the observation made in 1925 is pertinent but also to call attention to the fact that this same article has been quoted from by others from time to time in an endeavor to show a change in viewpoint on certain essential factors relating to pharmaceutical progress on the part of the writer because his activities changed from teaching and college administration to board administration.

For example, in quoting the writer with regard to practical experience in a paper appearing in the Journal of the American Pharmaceutical Association for November 1936, two sentences were conveniently omitted because they did not fit in with the argument that was being advanced. The two sentences read, "I hope the store experience requirement will never be abolished entirely. It is as essential to pharmacy as the internship requirement is to medicine and the law office experience is to law." That was in 1925.

We are fortunate in having as the administrative officer of our Board an individual who has been on both sides of the fence and whose record on both sides has been thoroughly consistent in the interest of supplying an improved personnel for our profession and creating a better appreciation of that profession on the part of the public.

The problem of providing adequate opportunity for the better trained personnel in American pharmacy to exercise its professional function is linked closely with the limiting

of numbers admitted to the colleges. They are the gateway. If the gateway is partly closed, and closed particularly to incompetents, only those will gain entrance who are prepared to accept the responsibility which goes with professional opportunity.

We are hearing complaints from certain types of chain and cut rate stores that they are unable to get registered clerks. Heretofore this has been no problem for them. There were plenty of pharmacists available and jobs were not plentiful. Consequently, they have been able to obtain registered help at low prices and in any quantity desired. The head of a chain of cut rate stores recently told us that they would open more stores in our state if they could get the right kind of registered men. Scarcity of registered personnel will be a blessing if it keeps this kind of outfit out of our state. Better salaries will have to be paid registered pharmacists when there is competition for their services and when better salaries have to be paid by cut rate stores and chains, there will be less unfair competition against independent retailers.

Pharmacy will sooner come back to pharmacists when the personnel of our profession has been reduced and purified.

The problem of stimulating public appreciation of the value and necessity of proper pharmaceutical service will not be solved until a larger proportion of the establishments from which the public derives its understanding of pharmacy; namely, the retail drug store, is made to reflect its essential services. Here is additional regulatory work for boards of pharmacy to which they must give extensive attention. The more one studies these problems, the more it is apparent that teaching and testing with the various ramifications of these functions largely control the future of pharmacy. There must of necessity be a line of demarcation between these functions, but the fence need not be a high board or concrete affair. It might just as well be an imaginary line whose presence might indicate an artificial boundary between certain aspects of the same problem.

Bringing Our Pharmacy Laws Up To Date*

ROBERT L. SWAIN

Secretary, Maryland Board of Pharmacy

We have been hearing a lot of the horse and buggy days and certainly we in pharmacy must go back to them for the starting point of our system of state pharmacy laws. This fact is of importance because even today, our pharmaceutical jurisprudence still reflects the thinking of an economic and social era long since gone. Every state pharmacy act bristles with concessions to the demands of commerce. They contain exemptions which could not be there if our law making bodies had been as responsive to the public welfare as they have been to the pressure of selfish business groups.

Let us go back to one of the earliest state acts regulating the practice of pharmacy, namely, that of South Carolina, enacted in 1817. This act was passed to "regulate the licensing of physicians to practice and for other purposes therein mentioned." Among the interesting provisions of this law is the following:

"And be it further enacted by the authority aforesaid, That no apothecary within this State shall be hereafter permitted to vend or expose to sale, any drugs or medicines without previously obtaining a license to do so from the Medical Society of South Carolina, or Board of Physicians created by this Act. And every apothecary so vending or selling drugs or medicines contrary to the provisions of this Act, shall be liable to all penalties imposed by this Act, on physicians and surgeons practicing without a license: Provided, That nothing herein contained, be construed to prevent merchants or shopkeepers from vending or exposing to sale medicines already prepared.

"And be it further enacted by the authority aforesaid, That the Medical Society of South Carolina, and the Board of Physicians, created by this Act, shall have the power to examine any apothecary who may apply to them for a license, touching their knowledge of drugs and pharmacy, and on finding such person qualified, shall grant such license, and shall receive therefor the same fees as provided in this Act for license to practice medicine and surgery."

Please note that the principle of decay was contemporaneous with the first efforts to make real headway and the proviso: "that nothing herein contained, be construed to prevent merchants or shopkeepers from vending or exposing for sale, medicines already prepared", still persist to confuse and confound the practice of pharmacy even to this day.

In Maryland, there is to be found this relic of unintelligent

*Written for this Journal at the request of the Editor.

thinking: "Nothing in this sub-title shall be construed to prevent or in any way, make unlawful, or interfere with, the sale or display by general merchants, of any proprietary or patent medicines; or the sale by such general merchants, of commonly used household and domestic remedies in the original, unbroken package".

In New Jersey, this derelict is found: "Nothing in this Act shall be construed to apply to, or in any way interfere with . . . the sale of simple, non-poisonous, patent or proprietary medicines, nor with the sale of simple, non-poisonous domestic remedies by retail dealers in rural districts."

West Virginia is burdened with this archaic tidbit: "The provisions of this article shall not apply to the sale of patent or proprietary medicines, nor to such ordinary drugs which are usually sold in a country store".

It would be possible to select from the pharmacy acts of every state, some such provision, but these few are sufficient to show that while we have made tremendous advances in our educational and professional preparation, our progress is still very seriously curtailed by this hangover from our earliest pharmaceutical laws.

Another basic defect in our pharmacy laws is that the words "patent" and "proprietary" medicines are looked upon as synonymous, and this similarity of meaning is pretty well solidified in the judicial decisions interpreting pharmacy laws. The time was when there was no real distinction between "patent" and "proprietary" medicines, but today the distinction is very wide and very important.

The average person looks upon a patent medicine as a product which is advertised direct to the public for self-medication and which is not relied upon by physicians in the treatment of disease. Proprietary medicines on the other hand, have come to mean that type of pharmaceutical specialty which is used largely by the medical profession, which is rarely if ever, advertised direct to the public by the manufacturer, and which is not suited for self-medication in the absence of competent medical advice. Yet, in most states there is absolutely no regulation or control over the sale of stereotyped patent medicines on the one hand, and the newest proprietary remedies on the other.

The mere statement of this most amazing fact shows just how little the public interest has been regarded in this whole

matter of distribution of drugs and medicines. Then too, we have not been successful in restricting the practice of pharmacy to registered pharmacists. We all know what happened in the case of the Pennsylvania Ownership Law, and just a few days ago, the Governor of New York, vetoed a bill, the sole purpose of which was to limit the operation of drug stores to registered pharmacists. And so, in spite of the fact that pharmaceutical education is on a sound university basis, and in spite of the further fact that every state in the union requires that the pharmacist himself must meet stringent standards of scholarship and professional competence, the state of the law is that any Tom, Dick, and Harry, irrespective of race, color, or previous condition of servitude, may own and be the responsible head of a pharmacy or drug store.

That this situation should be true is a sufficient incentive for us to make every possible move to bring about a drastic change in our legal thinking and procedure on the subject. The inconsistency in our pharmaceutical legislation is best illustrated, I think, by the law governing the sale of exempt narcotics. The Harrison Act, as well as the narcotic acts of the various states, permit the sale of exempt narcotics by grocers, general storekeepers, and all others who see fit to register as Class 5 dealers and pay the registration fee of \$1.00, and this is in the face of the specific requirement in the federal and state acts that exempt narcotics may be sold only for legitimate medical needs.

Certainly the usual storekeeper does not know what legitimate medical needs may be and yet, he is burdened with the legal necessity of confining his sales to those circumstances which he knows little about and which he is, by the very nature of things, incapable of determining.

It is a matter of great interest too, that while the laws of the various states surround the retail druggist himself with a great amount of regulation and control, there is, for the most part, no such regulation and control thrown around the manufacture and wholesale distribution of drugs and medicines. In most states, any person without let or hindrance, may engage in the manufacture of medicinal preparations. While the retail pharmacist must possess a university diploma and conform to stringent state requirements in order to compound a prescription for a dozen pills, the field is free and open to anyone who may desire to make and market these pills by the ton.

In Maryland, Virginia and a few other states, all manufactures of drugs and medicines are required to operate under permits issued by the Boards of Pharmacy. It is to be hoped that this trend will be universally followed as this does admit of the proper kind of regulation and control.

While the retail pharmacist may, as result of his training and experience, reach a volume of \$20,000 retail business a year, he might have gone into the wholesale drug business and enjoyed a volume of \$2,000,000 a year without ever having heard of a college of pharmacy or without ever having opened a pharmacopoeia.

It would be possible, of course, to point out other defects in pharmacy laws. At any rate, these are sufficient to show the seriousness of the situation. The American Pharmaceutical Association has long been interested in this subject and a short while ago set up a committee known as the Committee on the Modernization of Pharmacy Laws, the purpose of which is to make a comprehensive study of the subject and to work toward a system of pharmaceutical legislation which will be expressive of the advances in pharmaceutical education, the demands of public health, and in line with the thinking of a more enlightened day.

The field confronting the committee is almost without limit and much time and effort will be required in order to reach its first objective. Nevertheless, it is encouraging to note that the work has been started.

The Relationship of Pharmacy to Public Health*

EDWARD SPEASE

Western Reserve University, School of Pharmacy

Introduction:

Undoubtedly such questions as to the place of pharmacy in public health, whether it be a profession or an art, or both, whether it belongs in a university or whether it is merely a commercial pursuit, have particularly of late years, been bothering many college presidents and executives and even a few of us, vitally concerned with its welfare. In presenting what I have to say, I must of necessity draw largely

*Pharmaceutical Conference, Ann Arbor, Michigan, 1937.

upon my own experiences and present to you the reactions of others as seen through my own eyes and in the end, let you draw your own conclusions as to what pharmacy really is and where it belongs.

One of our main faults is that we have been so confident in our own minds of where we fit in, in health programs, that only lately have we observed that in the changing order of things, it has become necessary to justify our position.

Another great fault of pharmacy, which again we did not see soon enough, was our lack of education, coupled with the almost total absence of research. Lack of education and lack of research have formed a vicious circle, the first preventing us from securing the means for the second, and the second preventing us from taking our rightful place in health program, at least insofar as the educational side has been concerned. For quite a period of years, nothing of any value professionally appeared in the pharmaceutical press, but today every journal carries something, though much of it is misdirected and carries the mark upon it, either of selfishness or lack of knowledge of the whole problem.

When I went to Cleveland in 1916, the School of Pharmacy, though it had been in existence since 1883, was a proprietary institution and was a maker of drug clerks. To be able to "pass the Board", was doubtless its main objective. I went to Cleveland feeling that if I could interest a medical school of the type that existed there, in the worthwhile-ness and purpose of pharmaceutical education and show them that pharmacy was an essential part of a health program, then and only then, could I be proud of being a pharmacist.

Modern medical education looks to the hospital for its application. At one time the medical graduate, or at least many of them, depended upon association with an older physician, or a preceptor, to learn applications or practical things. The pharmacist has looked to the drug store. The commercialization of the drug store has prevented the graduate from learning anything of the professional part there. The medical graduate has learned application in the hospital at the hands of many teachers, all in closest contact with the patient. He then goes out with the most modern knowledge of the way in which he should practice his profession.

Prescription practice based upon rational therapy must be learned by the physician in the hospital. The pharma-

cologist teaches him the fundamental principles but the practical application must come from the clinician. I was taught by pharmacy to think, and the majority of pharmacists now believe that the medical student is not taught enough about drugs and prescription writing in the medical school. I have always felt there was something wrong about this idea. Mere prejudice alone could not bring about this condition. The only way I could understand it was to learn what the medical student was taught and why, and then follow him through the hospital when the motive became perfectly clear. Having done this, I feel now that he should have more training about drugs and about prescription writing but this should come, and in some places does come, at the hands of the clinician in bedside diagnosis. It is possible, too, for the hospital pharmacist to show him what information and help he should expect from the pharmacist.

The departments of pharmacology have done a great work but unfortunately have had and are having the same type of differences of opinion with clinicians that we as teachers have with our practicing druggists. The training of the future pharmacist must be in the hospital, side by side with the physician if he is to understand the duties of his profession. Here and only here, can he learn what is meant by rational therapy and see exactly where he fits in in the modern program of health education.

The duty of the pharmacist is to know the physician's needs and to secure for him the agents to fill those needs, and to secure them in their proper form, but not to tell him how to practice medicine, for in this the pharmacist's knowledge may be purely theoretical.

What I have said thus far has been perhaps a mere statement of thesis, and without further delay, I shall proceed to show you the course we have taken in Cleveland, which may now be considered as progress. I might say, too, that in the beginning we could not have stated it as I am doing today, even in theory, but it has been evolved through trial and error until we now have quite a clear conception of what we are doing and why.

I might digress just a little to say that medicine has suffered in the development of its program from thoughtless and careless statements, even to the point of maliciousness, from men in high places, just as pharmacy is even

today suffering, but I am more confident now than ever before that we shall "weather through" if we train our students properly and inculcate proper ideals and motives in them while they are young enough to grasp new thoughts. I refer to such remarks as one made before a medical audience some years ago by a nationally known figure when he said in effect, that nothing constructive had ever come from pharmacy. My impression is that he tried to "bite the hand which fed him" to make himself popular. His star seems to have waned since that time. Another gentleman, who is today studying dental education, has said that we do not need pharmacy schools, that the pharmacologist can select a few of his students, and I presume he meant the poorest of them, for he would hardly advise a medical student who is doing well to drop medicine and take up pharmacy, and train them to perform the function of a pharmacist. Such a statement shows that he knows nothing of pharmacology, let alone pharmacy. He was given an apt answer by a college president, who said that he understood pharmacology and pharmacy to be to one another much like chemistry and chemical engineering. I presume the same man would also argue that pharmacology is a branch of physiology and that all the chairs of pharmacology should be abolished. But enough of this digression as I prefer to tell you how we developed our program.

I was first given the privilege of visiting the hospital and observing what goes on there. I spent much time in making the acquaintanceship of medical men, both teachers and outside practitioners, and men and women engaged in public health activities.

We received our first recognition in *The Cleveland Foundation Year Book* for 1922 and in the *Cleveland Hospital and Health Survey*, published by the Cleveland Hospital Council in 1920. Part Eight, of the latter, refers particularly to pharmacy. I wish I could impose upon your time to read to you all of what Dr. Haven Emerson wrote about pharmacy, and may I add, that to my knowledge, there were no pharmacists employed in the survey. One or two paragraphs will show his grasp of the value of pharmacy. "As the knife is to the surgeon, so the drug or chemical is to the physician, and there must be keenness and strength and appropriateness in both. . . the pharmacist . . . is as indispensable an auxiliary

to the physician in the medical service of the community as are the dentist and the nurse."

He discussed the education of the pharmacist; or rather the lack of it. He discussed our state pharmacy laws and paused to point out what enforcement of them would accomplish, and criticised the meagre support afforded the board of pharmacy by the state. He took time to discuss the needs of the school of pharmacy and the reasons for each; he made suggestions as to the service the school could render and wound up with seven recommendations. These recommendations covered the duties of the Hospital Council and Academy of Medicine for the support of pharmacy, cooperation in regard to legislation, cooperation with the city Division of Health and called upon the Chamber of Commerce to help suppress "fraudulent proprietary medicines", recommended equipment for the school and what it should be called upon to do for the hospitals.

Prior to this time, I had spent much of my time in legislative work, looking to the advancement of medicine and pharmacy. This, of course, involved endeavor in the strengthening of local pharmaceutical associations.

Our first step as a school in connection with hospitals was to require our students to spend some time in the hospital pharmacy but that was not very satisfactory either to the hospital or the student. However, it was not discontinued but rather evolved into our present program.

After some years of trying to find how we fitted into the health group, we drew up an agreement between the university corporation and the hospitals corporation which was almost an exact copy of that existing for the medical school. This agreement has the force of an expression of policy. By reason of it, the head of the department of pharmacy in the school becomes the directing pharmacist of the hospitals and pharmacists in the hospitals receive appointment on the teaching staff of the school with faculty rank. Pharmaceutical research is made possible.

Our hospitals are governed by a board of trustees, and just below it, the medical council, made up of the director of administration of the hospitals, the heads of the several divisions as medicine, surgery, pediatrics, obstetrics and gynecology, pathology and the dean of the medical school. Our agreement provided for a pharmacy committee made

up of a representative from the four major divisions mentioned above, together with the directing pharmacist and pharmacist.

This committee has met monthly and oftener and passes upon the policy of operation of the pharmacy, what it shall stock and approves the results of investigations of new items and changes in the use of drugs and chemicals and professional supplies. Professional supplies embrace surgical instruments and appliances, gauze, bandages, cotton, ether and in short all things employed for care or treatment of the patient. It may be of interest to add that an associate professor of surgery has been the chairman of the pharmacy committee and the pharmacist who has the rank of instructor, its secretary since its inception.

The school in turn maintains a manufacturing laboratory for the hospitals and a control laboratory to pass upon all products used by the hospitals. Some research in the use of proper items has been conducted in the control laboratory.

After a few years of pioneering and arriving at the proper duties for the committee, we approved a drug policy which has been printed many times. It, in short, provides for the use and stocking of only such drugs and preparations as are found in the *United States Pharmacopoeia*, *National Formulary* and *New and Non-official Remedies*. Drugs for research are provided for. This policy has almost eliminated questionable therapy.

The committee has prepared a hospital formulary, not a pharmacopoeia. It contains such preparations as may be kept ready compounded, all of which are given distinctive titles, not numbers, and such sizes of tablets, suppositories, ampules and the like, which are stocked by the pharmacy. Its purpose is merely one of convenience in ordering and prescribing.

The school sends all of its students of the junior class to the hospital for lectures, demonstrations and visits to the various departments of the hospital. The pharmacist is in charge of this work and by him, members of departments and heads of special services are invited to give instruction to these students to the end that they learn the nature of medical education and practice and the function of a hospital.

In the senior year, such students as are properly qualified, may with faculty permission elect a special and more intensive

course in hospital pharmacy, where they actually serve time and receive instruction in each department of the pharmacy. To this end, we have divided the pharmacy into the pharmacy proper, the out-patient pharmacy, the sterile solution laboratory, the non-sterile solution and utility drugs, the administration office, and the professional stores. Such students as show ability and interest are directed upon special problems of minor research.

We have just had a proposed curriculum approved by the graduate school, which will enable us to offer graduate work with a major in hospital pharmacy. All students spend a greater or lesser time in courses in manufacturing and control of products for hospital use. I presume that the large number of problems arising daily hastened the development of graduate courses just as much as has the large number of inquiries from young men for graduate work.

One's thoughts will naturally turn at this point to what are the opportunities for such people after they have completed this work. The opportunities as yet have not given us any cause for worry because medical schools and hospitals have become interested in the problem. Reference to our chapter in Remington's Practice will show how the opinions of Hatcher and Dooley helped us. Dr. Leake of California is even now working on a project similar to ours. We placed pharmacy internes and residents, last June, in hospitals other than our own, for the first time. It looks now as if we shall have to make new hospital contacts this June because the hospitals who have had internes the past year, wish to keep them. I may add that we have placed no internes or residents in hospitals where there was not a registered pharmacist. As far as I know, the University of Michigan was the first hospital to inaugurate pharmaceutical internships. I have not yet been able to keep a chief pharmacist long enough for us to look upon that one position as a permanent one. It will not prove to be a permanent position until the holder of it is one who possesses the Ph. D. degree.

One of our greatest problems is to develop a faculty or perhaps, rather to secure support that will produce a teaching staff of such quality that all phases of graduate work will be under proper supervision. This problem, however, is not one that is ours alone. Pharmacy schools are in sore need of men and women who are capable of supervising graduate

work and research. The duty now of university administration is to provide these people, so that research may proceed and keep pace with the crying need for it. I think that one of the greatest indictments against pharmacy is the fact that the major portion of the best known and most active leaders in pharmacy are not pharmacists per se. This indictment is not of the men, far from it, but surely is an indictment of pharmacy itself.

Of course, we again have a vicious circle, and until funds adequate to produce these much-needed people are forthcoming, the people themselves will not appear. There is no reason why every school of pharmacy should attempt to repeat the course of procedure which we have followed, nor why any one school should imitate another unless it be in the matter of instruction in the hospital and that I deem essential to the future practice of the profession.

There is, however, every reason for the development of high grade schools of pharmacy and the opportunities for pharmaceutical research. Most of this is being done now in the laboratories of our great manufacturers and of course, it cannot be said that the motives there are entirely altruistic.

Our schools must have men sufficiently trained in the several branches we are now teaching and with an especial emphasis upon organic chemistry and pharmacology, to the end that pharmacy may do research upon vitamins, hormones, glandular substances and the isolation and synthesis of alkaloids, glucosides and similar bodies. The field for pharmaceutical research is broad and long and each of our schools can easily find a particular part of this field in which it can dig without fear of very much duplication.

There is no doubt an opportunity, due perhaps to location, for some schools to confine their efforts to things commercial, as there always will be a need for instruction in real merchandising, the buying, handling and selling of drugs and pharmaceuticals and even professional supplies. Now I do not mean by this statement the merchandising of questionable products, which have done much to bring pharmacy into ill repute with professional and lay people. I do not mean either, the teaching of salesmanship to people who couldn't sell a broomstick to a blind man. A hospital pharmacist must know something of administrative procedure. It is true that he can learn them in the hospital as others have, but it takes time and costs much.

Some of you may want to ask the question, what is the attitude of medical men to the program of hospital pharmacy and pharmaceutical research. I think that the fair and honest answer is, that with us at least, the medical men have not only encouraged us but made it possible, and it is their aid, understanding and good will that have brought it about.

Hospital associations are also interested. The American Hospital Association had a pharmacy committee last year. Its very interesting report will be found in *Transactions of the American Hospital Association*, Volume XXXVIII, 1936. It has a similar committee for this year. The American College of Surgeons put its approval upon our suggested minimum standards for a hospital pharmacy and have included them in their instruction book. The Catholic Hospital Association of the United States and Canada, has likewise endorsed our minimum standards. The American Pharmaceutical Association has established a sub-section on hospital pharmacy which will have a program at the New York meeting this year. Your own hospital pharmacist, Mr. H. A. K. Whitney, the Chairman of the Section on Practical Pharmacy and Dispensing, is responsible for this activity and has been instrumental in selecting a chairman for this sub-section. He chose the only hospital pharmacist who, as far as I know, has the rank of assistant-professor on a university faculty. He is Prof. Louis Zopf of the University of Iowa.

Those of you in retail pharmacy and even those of you who feel that your only calling is to make a living in pharmacy, may wonder just where you fit into this picture I have been painting. But really, I have not been painting, I have been relating facts. The results are already noticeable in some of our retail pharmacies. Better prescription business and more patronage from the physician have actually come to pass. This is because the physician and the pharmacist have begun to understand each other. This, of course, will be enjoyed only by those druggists who will read and study and try to understand, not only what the physician expects of them, but also what their duty is to the public. The public has a right to expect professional service from the pharmacist and this too, of a very high order.

It is the duty of the pharmacist to take part in all cam-

paigms looking to better public health, such as campaigns to stamp out tuberculosis, venereal diseases, better food and drug legislation and to offer aid to city and state health departments. In some states the pharmacist has a place in all state health activities and in some, is a member of their state or city department. He cannot have professional standing nor should he expect to have any special regard from any professional groups, unless he is really "more than a merchant."

Frankly, I have been very much ashamed of the weak, namby-pamby and even antagonistic editorials and articles in our pharmaceutical press and their perfectly insane attitude toward the proper revision of our national Food and Drugs Act. They were afraid to take a real stand as did the Journal of the American Medical Association upon the side of public health and of protection for the consumer. In my locality, the northern part of the state of Ohio, I am sure that with my sixty-odd talks before clubs, large and small, on and off the radio, I have made more friends for pharmacy by taking an unequivocal stand for the right, as I see it, than by anything else I have ever done. I shall not get funds for a building nor an endowment from the makers of nostrums, as a result, but I do not believe any school has a right to lift its head professionally that has received such gifts.

I am optimistic enough to believe that the professional pharmacist will some day learn that it is good business as well as sound therapeutics to stock only the 1619 drugs in the United States Pharmacopoeia, National Formulary and the New and Non-official Remedies. Are not 1600 drugs and remedies sufficient for any practitioner of medicine? Is there any good reason why any worthwhile and scientific proprietary should not be listed in New and Non-official Remedies?

Our school of pharmacy is now an integral part of our health group which is made up of the School of Medicine, the School of Dentistry, the School of Pharmacy, the School of Nursing and the School of Applied Social Sciences.

If every school of pharmacy would adopt a program similar to ours, though not necessarily a duplicate, it would not be long before the practicing pharmacist would find himself in his proper relation to public health.

Should We Have A Distinctive Pharmacy Degree for the Completion of the Four Year Course?*

ERNEST LITTLE

Rutgers University, College of Pharmacy

A short time ago Dean Jordan wrote me requesting that, at this session, I present briefly my ideas relative to the question: "Should we have a distinctive pharmacy degree for the completion of the four year course?" Later I received notice that the title had been changed to: "Why we need a distinctive pharmacy degree for the four year course, instead of a B. S. degree".

With your permission I shall speak on the original title, "Should we have a distinctive pharmacy degree for the completion of the four year course?" You notice that this title is expressed in the form of a question and invites discussion. The revised title allows of the presentation of arguments for one side only and permits no debate relative to the main question involved.

The average association member desires, not to have his thoughts guided in one direction only, but rather to have presented to him, as fully and unbiasedly as possible, all the facts relative to questions which he must decide or help decide. It is this attitude on the part of our members which encourages us to present our thoughts relative to any question as definitely and convincingly as possible, with no thought of possible offense to others. Such an attitude also stimulates and maintains a fine tolerance for the other fellow's opinion and makes for real progress within our ranks.

I am submitting a written, rather than an oral presentation, because I feel that by so doing I might more briefly and clearly present the few points which I have to offer.

I wish to state at the beginning of my presentation that, although I feel that this question is important enough to warrant discussion on this program, it is not one of the big, fundamental questions awaiting an answer from our profession. The average man on the street knows little or nothing about degrees and has no desire to be enlightened concerning them. The letters B. S. seem equally attractive, and probably no more so, than the letters Ph. B. or Phar. B.

*Joint Session A. A. C. P. and N. A. P. P., Dallas, 1936.

Those of us who have been more closely associated with the awarding of degrees are perhaps less impressed by them as we grow in experience. In moments of unusual discouragement along this line, I have sometimes wished that we might abandon all degrees, in the hope that real ability and merit, rather than relatively superficial adornment might become the basis of selection of individuals for important responsibilities. Such an arrangement should increase, rather than decrease, the need for adequate, formal training and would definitely increase the importance of qualifying examinations which, of course, have many shortcomings of their own and are decidedly vulnerable. It would, however, be a great stimulation to educators to have a higher percentage of students in our colleges working for an education, rather than for degrees.

Assuming the need for degrees to be definitely established, which is unquestionably the case, we come back to our original question which was asked at the beginning of the discussion: "Should we have a distinctive pharmacy degree for the completion of the four year course?" My answer, for the time being rather than for all time, is both "Yes" and "No". It is "Yes", in the sense that it is desirable that the degree should show the field in which the major work has been carried out. It is "No", so far as the abolition of the Bachelor of Science degree is concerned. In other words, in my judgment, the best degree to be awarded at the present time is the Bachelor of Science in Pharmacy (B. S. in Phar.)

In arriving at this decision, my judgment has been guided by the thought that the best degree for our purpose would be the strongest available degree, which at the same time gives to pharmacy the full recognition which it merits. The latter part of this requirement seems to definitely rule out the Bachelor of Science (B.S.) degree. It is indeed a strong and highly respected degree, but will be objected to by many on the grounds that it is not distinctive, so far as pharmacy is concerned. It does not show the field in which the major work was taken. It should be more specific.

The Bachelor of Pharmacy degree is, of course, specific and distinctive in behalf of pharmacy. It is, however, a weaker degree than the Bachelor of Science degree. It has less prestige; it is not as well known; it is of less advantage to, and less appreciated by the recipient.

The time may come, and we all sincerely hope it will, when the Bachelor of Pharmacy degree will enjoy a standing equal to that of Bachelor of Science, but that time has not yet arrived. In the meantime, let us use the strongest available degree and thus add to the prestige and standing of American pharmacy.

But, some of you may say, how can we expect to develop adequate prestige for the Bachelor of Pharmacy degree unless it is being regularly awarded by our colleges of pharmacy? My answer to that inquiry is that the mere awarding of a degree can never serve as a source of strength, but sometimes of actual weakness, especially if unwisely or prematurely done. Continued improvement, not only in pharmaceutical education but in the whole general field of pharmacy, and this alone, can accomplish the desired result. When the word "Pharmacy" enjoys a standing comparable to the word "Science", the time for the awarding of the Bachelor of Pharmacy degree may have arrived.

I repeat, by way of conclusion, that the Bachelor of Science in Pharmacy degree, and not the Bachelor of Pharmacy degree, should be awarded for the successful completion of the four year pharmacy course, for the following reasons:

I. From a standpoint of accuracy in nomenclature, the four year course is exactly what this degree indicates it to be; a broad, scientific course with the major emphasis on pharmacy. The curriculum could not be more accurately described.

II. It is a strong and highly respected degree. It will definitely add to the prestige of pharmaceutical education and of pharmacy generally, if our graduates are recipients of a Bachelor of Science degree, with pharmacy designated as the major field of work.

III. In the interests of uniformity and high scholastic standards, I look forward to the time when special degrees for the four year undergraduate course may be largely abandoned, and the Bachelor of Science degree, with definite mention of the field in which the major work was done, substituted, as is already the case in many universities where the Bachelor of Science in Chemistry, Bachelor of Science in Biology, Bachelor of Science in Agriculture, Bachelor of Science in Engineering, etc., are now being awarded.

It might have proved advantageous to have included in this discussion the question as to the most appropriate de-

grees to be awarded for one to three or more years of graduate work. I have, however, purposely limited my presentation to the topic as submitted, which questions only the degree to be awarded for four years of college work.

The Iowa Interprofessional Association, Its Purposes and Possibilities*

WALTER F. MEADS

Secretary of Iowa Pharmacy Examiners and of the Iowa Interprofessional Association

The past quarter of a century has witnessed rapid changes in our profession, both in merchandising and in the qualifications of the pharmacist himself. The drug store, however, remains an essential and responsible factor in caring for the public, its health and its interests. To pharmacy as a profession has been assigned not only the public's interests but the interests of the public health professions. Medicine and pharmacy are sister sciences and as such have gone down the years together; dentistry and nursing are newer in the field, but now join us in the forwarding of our own welfare and that of the public. To further the interests of *all* groups, to raise the standards of each, and to cooperate to the fullest extent one with the other, there has been organized during the last two years the Iowa Interprofessional Association.

The organization was brought about by representation of the committees of the organized professional groups in the state, namely, medicine, dentistry, pharmacy, veterinary medicine and nursing. These representatives presented a resolution for an allied organization which was presented to each organization and adopted by each at the regular annual meeting of each organization in 1935. In 1936 following a similar procedure, a constitution was presented and adopted.

The activities as outlined relative to the development and organization of the Iowa Interprofessional Association, represents only a small part of the actual effort that has been

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made to make this association a reality. During the many years preceding the first meeting of the allied professions, the occasion was rare when our Pharmacy Examiner, George Judisch, and Doctor Robert L. Parker, present Secretary of the Iowa State Medical Society, met and engaged in conversation that they did not discuss the possibilities of a state interprofessional organization. They may well be called the grandfather and father of the present interprofessional group; and with the interests of all member groups at heart they both took part in putting together the constitution of the association as it stands today.

This Constitution of the Iowa Interprofessional Association states the purpose of the organization shall be to federate the professional associations of the state in order to carry out the following objectives:

First. "To provide a clearing-house for the interchange of information concerning the plans and methods of organization developed by the various member societies."

Such a clearing-house has been developed between the legislative committees of the several societies to the benefit of all concerned, and if this same coordination can be developed in local groups, there will be no question as to the success of this new association. It is hoped that in bringing together members of the allied professions friendlier relations will be promoted because it is only on a basis of friendship that many problems may be brought up for consideration and settled to our mutual satisfaction.

The second objective as set out by the Constitution is:

"To act as a bureau of research and information, to study and report on various civic problems in the solution of which the technical knowledge of professional people is of value."

Public health matters are subjects deserving of study by pharmacists. In order that the pharmacist may measure up to his responsibilities, he should always be interested in civic and community problems relating to health and take active part in their solution. If we wish to be considered by the public as professional men, more interest will be necessary in health matters. This interest would give us the opportunity also to counteract much of the unfavorable publicity that has come our way in recent years due to the emphasis that has been placed on merchandising in our

stores. Active participation in local interprofessional organizations should offer such an opportunity.

The third purpose is:

"To educate the public with respect to the aims of the member professions and the value of high-grade professional service."

Every pharmacist owes it to himself and to pharmacy to aid in acquainting the public with the service rendered by pharmacy and its importance. Much is being done along this line by our State and National Associations, but the effort of the individual pharmacist in educating the public in his own community is still sadly lacking. National Pharmacy Week offers an excellent opportunity to appear before civic and social organizations and should be taken advantage of by the pharmacist. In educating the public, the value of professional window displays should not be overlooked. The aims and value of the other professions can easily be made a part of this endeavor.

The fourth objective is:

"To cooperate in securing and maintaining legal and ethical standards of character and education, requisite to the rendering of high-grade professional service."

Hardly a session of the Legislature goes by that legislation is not sponsored to license a new group to engage in the treatment of disease under many and varied conditions. We must be interested in legal requirements requisite to maintaining high standards for those persons who wish to engage in health practices. The combined efforts of the five professions should be very effective in protecting the public from licensed empiricism and be of aid to us in raising the standards under which drugs and medicines may be distributed.

The fifth purpose is:

"To cooperate with the proper legal authorities in the enforcement of professional laws."

Progress is being made in the revision of our laws and those of the allied groups; enforcement must naturally follow if real benefits are to result. If the proper authorities do not cooperate, the combined professions should have sufficient power to secure the enforcement of any laws directly affecting the professions and the public health.

The next objective of the Interprofessional Association is:

"To cooperate in promoting plans for the advancement of the material welfare of the member professions."

The advancement of our material welfare is a prime consideration in any effort we put forth, regardless whether the reward is direct or indirect. This purpose, as well as the others mentioned, will be almost entirely dependent upon the extent to which friendly relationships are established between members of county or district associations. Our opportunities for mutual business dealings can certainly be enhanced by cordial meetings and a proper perspective of each other's problems. If we are to benefit materially by this association with other public health groups, we must recognize first that the welfare of the doctor, dentist, veterinarian, and nurse must be considered and promoted. We then in our turn will receive the cooperation necessary to promote our own professional well being.

The seventh and last purpose of the Constitution is:

"To promote the organization of county and district federations for the carrying out of the objects outlined above."

Letters have already gone forward to members of the allied associations in each county requesting assistance in organizing local or district interprofessional groups. The success in perfecting such organizations will necessarily have to depend upon the interest and enthusiasm of those who have been contacted and the support they receive from the members of their own professions.

Following the organization of county or district interprofessional groups, it is the duty of the office of the state association to receive from the member professions suggestions of plans or recommendations for consideration, and if approved, to forward same to the officers of the local organizations for attention.

The possibilities of the Iowa Interprofessional Association are many, but time will be taken here only for the discussion of a few of them. The getting together of members of the allied professions is the first step towards the promotion of friendly relations. It is only on this basis that a clearing-house can be provided for the interchange of plans and problems and a solution can be made that will be mutually satisfactory. A free interchange of suggestions and criticisms should be encouraged and good fellowship should prevail.

It should be possible for the pharmacist, through his

local interprofessional association, to become more closely identified with movements promoting public and personal health and thereby enhance his professional prestige. In the past, activities along this line have been confined largely to the medical and nursing professions.

The pharmacist should be alert to the possibility of furthering the professional part of his business. There has been some activity in this state to promote a better understanding between pharmacists and physicians in the past, but only a small amount, if anything, has been done with the other professions. Dental pharmacy offers a field which has not been explored to any extent in Iowa, and with some study and the proper approach, there is no reason why the pharmacist cannot create a demand for his professional service by the dentist. Our National and State Associations stand ready to advise and to assist in furthering the use of U. S. P. and N. F. preparations by the medical and dental professions, and the pharmacist should never miss an opportunity to advise and promote the use of official preparations instead of proprietaries.

A series of articles by pharmacists and physicians, on U. S. P. and N. F. preparations, is appearing in the Journal of the American Medical Association. It is understood that these articles are to be published in pamphlet form after the series has been completed and will be available for distribution. Every pharmacist should obtain a copy and familiarize himself with the contents. This is also true of the booklets on U. S. P. and N. F. preparations published by the National Association of Retail Druggists and the American Pharmaceutical Association. If the pharmacist is to derive material benefits from his activity in interprofessional relations, he must prepare himself to sell professional service, and make his store one that merits professional confidence.

The matter of preparation incident to rendering better professional service, can be overcome by the pharmacist regardless of his education. Even though a library is not available if some time will be devoted to study and to reading the pharmaceutical journals, much can be learned. Many of these publications carry useful information and might well be used as suggestions for subjects to be presented at the group meetings of our association. A part of the time in every program should be devoted to the pro-

fession of pharmacy. Here is an opportunity for the pharmacist to go to school again. One thing is sure, there never would be any lack of subjects and those of most interest to each group should be presented.

The present educational requirements, with a few exceptions, makes it necessary for the young pharmacist to be a college graduate before he may be licensed in this state. It has already been called to your attention that education is a necessary requisite to successful interprofessional relations. We need, therefore, have no fears that the young pharmacist will not be qualified. It might be well, however, to discuss for a moment the part that colleges of pharmacy should be expected to take in this movement.

It is not enough that our colleges graduate men and women as pharmacists who possess only those fundamentals of pharmaceutical practice. With improved relationships they must possess the ability to use their education to a material advantage in interprofessional contacts. One instructor in each of our colleges might well be delegated to keep in touch with interprofessional activities and cooperate with the committees of our association. In this way their services would not only be of value to our committee but would give them a better insight of the practical problems in the every day life of the pharmacist. Surely the obligation of the colleges of pharmacy to their students need not end with graduation.

The insight of the instructor might be broadened further if he would cooperate in promoting professional pharmacy in its many phases. Dental pharmacy is one of these phases that should have immediate attention. It is my opinion that our Association will never be successful in creating a demand for the professional service of the pharmacist by the dentist, without assistance from our colleges. The foregoing statements are merely suggestions and are in no way intended as criticisms.

Following the need of education in furthering interprofessional relations, the making of drug stores such that they merit professional confidence is next in importance. Due to the emphasis that has been placed on merchandising in many stores, it may be difficult in some instances to bring the professional side of the business before the public and the other professions, but it can be done. No movement has

taken place in recent years that has done so much to awaken professional pride in the pharmacist as the open or semi-open prescription department and I have yet to find one pharmacist who has made this change in his store who would change back to his old prescription department. On inquiry it will be found that the favorable reaction of the medical profession and the public is responsible for this attitude. There is no reason why the average pharmacist, if he is ethical, should not enjoy an increase in his professional business if he will strive for a proper balance between the prescription department and the many side lines which he carries.

The professionalizing of a drug store will be reflected in other ways than those mentioned. An increased appreciation and a better understanding of our legislative needs by those responsible for legislation and by the other professions, should result.

The allied professions may well combine their political and legislative efforts in a common cause. The rapidly changing economic picture in this country will bring many problems not yet foreseen, and the interprofessional association offers the best means of keeping in touch with these developments. Quite naturally we should stand together in the protection of our professional interests which have been developed and advanced over a long period of years, and further the candidacy of men to public office friendly to our interests.

From reports that come in from counties having such organizations, no effort will ever be necessary from the state office to stimulate interest in the political possibilities of such groups. One letter has come to the office of the Secretary stating that it was largely through the efforts of the interprofessional associations in four counties of one state senatorial district, that a candidate had been defeated in the last primary. This effort was due to the opposition by the senator to public health legislation. If this is any indication of what we may expect from such organizations, the problem that may present itself will be how to control our political activities rather than how to promote them. The Association will not justify its purpose if politics become the dominating interest.

In legislation there is no reason why the professions in the interprofessional association should not work together in

matters that relate to public health. After all, if legislation that is sponsored by one of the member groups is in the public interest and welfare, its enactment could have no objections from the other groups interested. The pharmacist should get this one point firmly fixed in his mind, that it will never be possible to promote successfully, any legislation in the interests of the profession of pharmacy, that is not backed by the sound policy of public health and welfare. Opinions may differ as to what constitutes such protection but laws in other states and court decisions have pretty well established precedents that necessarily must be considered in the enactment of laws in which we are interested. One thing is certain, a great deal of good can be accomplished if we will but confine our efforts to restricting the conditions under which medicines may be sold outside the drug store, rather than the restriction of the sale of these medicines to the drug stores. In this we should have the whole-hearted support of the member professions of the Iowa Interprofessional Association.

In promoting the purposes of this Association, the organization has been so developed that separate projects or plans, may be carried on by the individual group without participation of the other associations. It is hoped, however, that we may profit from the experiences of each group and through their friendship further our own interests. Let us all contribute something to the Iowa Interprofessional Association.

Women Pharmacists in Industry*

KATHERINE GRAHAM

The status of women in the working world, either in pharmacy or any other profession, has been accurately stated by Dr. Wakeman in the April issue of this Journal. The consideration of what is to be done about the situation now seems to be of major importance. As Dr. Wakeman has shown the matter is one which has, in the past, been settled largely by the women themselves and therefore, a statement from a

*Written for this Journal at the request of the Editor. Miss Graham is engaged in pharmaceutical research for Sears, Roebuck and Company.

woman in the merchandizing world may contribute something at this time when the subject is receiving special attention.

Dr. Wakeman has pointed out that the first step toward a solution is for women to prepare themselves intellectually so that they can perform their duties as well or better than men in the field. They have done so. This fact is indicated by statistics which tell us that 16.4 per cent of the working women are professionally trained against 4.4 per cent of the men; that the total production of Ph. D. degrees since 1900 has increased 6 per cent but for women alone it has increased 16 per cent. If these figures represent even half the true situation they indicate that women are not neglecting to do what they can to prepare themselves and to prepare themselves well.

The young woman beginning her pharmacy training is inclined to ask what training and how much is necessary in order that she may possess some advantage when she begins her commercial work. One who has been through this phase might be expected to give some prompt and positive answer but it has been found to be such an individual problem, varied by conditions and personalities, that it is difficult to give anything which is satisfactory for the group as a whole. Theoretically the same positions are open to women pharmacists that are open to a man with the same degree of education but since a woman has often to overcome prejudice she must present, in addition to her technical pharmacy training, something individual which will tip the balance in her favor. Quite often these additional qualities are adaptability and versatility, characteristics which practically all women possess in some degree and which respond readily to cultivation. While in school the young woman should have opportunity to develop these qualities even though she takes only the minimum pharmacy course. It is to be strongly urged that those in charge will see that the pharmacy course retains enough flexibility to allow the women, and also the men, a chance to vary their scope of studies in order to develop special interests in addition to the rigid requirements of the course. The versatility afforded by these special studies, however slight may be the actual knowledge acquired, will often give the student confidence to try a position which does not directly bear upon the line of work for which he has been

trained. There are positions in industry which do not require rigid specialization and a broad, general knowledge, if supplemented by common sense, may be quite as satisfactory as a limited technical training even in this age of specialization. While the development of versatility is to be recommended for both men and women students, it is particularly desirable for women since it may aid them to make a start in the commercial world when otherwise it might be difficult.

The quality of adaptability is especially important to a woman. During her school life the need for it is not so evident since, as Dr. Wakeman has shown, she has here achieved a measure of equality and can make her own conditions but at the beginning of her commercial life the woman graduate has the problem of adjusting herself to meet, endure or overcome, viewpoints and practices which she feels to be unjust and unreasonable. If she resents the situation too strongly the strain of this resentment, reacting as it does upon the working capacity of an individual, results in poor work which greatly harms the woman by retarding her advancement. It lies within the power of school authorities to do something to minimize this economic loss which results from lowered working capacity. If the women graduates can be advised, before leaving school, upon ways and means for cheerfully meeting the prejudice they encounter so that they can adapt themselves and make the best of whatever situation they find, their intellectual ability will sooner or later bring them recognition. The foundation for this adjustment should be laid in school since, if they wait to learn it by experience in the commercial world, they accumulate a series of failures difficult to surmount. The specific application of this adaptability is so much a woman's problem that it is only reasonable to expect that women teachers might most easily aid the girls in making their adjustment to conditions. This brings us to a consideration of the situation in our schools of pharmacy. These schools have in the past complained that industry will not hire the feminine graduates of their schools yet it seems that they themselves are not in a position to safely cast stones at the drug store owner who refuses to consider a woman pharmacist. Very few of our pharmacy schools hire a well trained and experienced woman teacher in a responsible position where she can adequately advise and help women students to make a success of their profession even against opposition.

This discussion has, to this point, had reference chiefly to the woman who takes the minimum pharmacy course. If she educates herself still further so that her training demands that she fill a responsible position the possibilities become more limited but more remunerative. The numbers are fewer and achievement is harder because the general competition is keener. The same prejudices are to be overcome but they are more bitter because the reward is greater. At the same time, because attention is more sharply focused the mental attitude of the woman is more noticeable and adaptability becomes a necessity because she cannot hope to succeed if, to the keener competition, she adds the burden of emotional stress which results from resentment. However, in these responsible positions the ability to produce is essential and the woman who is well trained, if she can gain a foothold to prove her ability, is more likely to receive recognition than she will in the less highly developed positions where ability or lack of ability can to some extent be covered up. A high production is something which industry, concerned with dollars and cents, will not entirely ignore. In a place where the quality of an individual's work is very noticeable, the woman with training can make her worth acknowledged although not always with as high a reward as she desires. Even men, in a so-called man's world, find that difficult.

There is some indication that the commercial world is becoming aware of the financial loss which results from the placing of well trained women in a position where their training is of no value to them or their employers and it is possible that industry may soon make greater utilization of the intellect and training of women employees. There is indication of this in the fact that the president of a large mail order house has undertaken an investigation of the abilities of women in the organization with reference to their employment in more responsible positions. A single step in this direction, however small may be the result, is worthy of note since any sincere effort will make the situation more hopeful of practical solution. The fact that some colleges state that all their women graduates readily find positions is further indication that industry is recognizing their ability. That women can find work in some states and cannot in others seems to indicate that the problem may be somewhat one of local conditions to which those concerned might give some attention.

The opinion is sometimes expressed that it is wrong to encourage students to spend money in taking graduate work when there is little hope that they can find a position sufficiently remunerative to repay them for the outlay. However, because an investment does not immediately pay is no indication that it will not in the future yield a good profit. Because a woman with a Ph. D. degree may now be forced to take a position which others with a B. S. degree can hold is no reason to assume that in ten years she will not hold a better place. Therefore it seems advisable to urge women who are capable of graduate work to prepare themselves with the highest possible scholastic attainments. They may have to accept a minor position but with training and broader vision they may develop the position so that it offers a chance for their ability to become evident.

The question is not one of preventing women from entering the profession for that cannot be done even if anyone should seriously desire that it be done. It is a question of training women to make the most of their opportunities, placing them in a position where they have a chance to make some use of their training and then allowing them to work out their own salvation without undue hindrance. Since the matter of placing a woman does not differ fundamentally from the matter of placing a man of the same education it seems futile to divide the efforts of authorities concerned with this and there might be less wasted effort if everyone could be persuaded to cease considering the matter from the standpoint of men and women and do their best for each individual engaged in the study and practice of pharmacy.

The Use of Chemistry in Teaching Plant Extractives*

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The students in pharmacy at the University of Oklahoma were being taught about fluidextracts, tinctures and extracts in a very perfunctory sort of way. They started in with a definition of fluidextracts and then studied each of the prepa-

*Chemistry section, Dallas 1936 meeting.

rations under this heading just as they were listed alphabetically. Naturally they forgot many of the facts that were presented in this manner. When they were called upon to fill prescriptions involving the use of this information, in the laboratory, they were frequently at a loss as to how to proceed.

As a result of the above conditions, a new course was added to the curriculum. These three classes of preparations, namely tinctures, fluidextracts and extracts were separated from the other classes of galenicals that are usually taught in courses in operative pharmacy. The title given the new course was "Plant Extractives." The prerequisites for the course were pharmacognosy and organic chemistry, in addition to the beginning courses in pharmacy. A knowledge of chemistry was believed to be essential for the proper approach of the subject matter to be presented. If you have not already done so, it is suggested that you read the article "Is Galenical Pharmacy a Science?" by Professor A. Tschirch. It appeared in volume 105 (1933) on page 461 of the *American Journal of Pharmacy*.

The first thing that is discussed in the course is the more common solvents that are used in pharmacy. The miscibility of each solvent with the others and mixtures of the others, together with their specific gravities, boiling points and viscosities are studied. This is followed by a discussion of solutions and the student is required to list in a notebook, the various classes of plant constituents that are soluble in each solvent. It is pointed out, under this heading, that each solution becomes a potential or possible new solvent.

In pharmacognosy, the students have learned about the distribution of the various classes of constituents in the plant and in chemistry they have learned something about their properties. All of this is correlated and reviewed.

The students are next assigned some drug and they study its inorganic constituents. Moisture determinations are made in both the green and the cured drug. The importance of water in the growing plant, in the curing, storing, and final extraction of the drug is emphasized. Enzymes and their action are especially emphasized. Ash determinations, including water soluble, acid soluble and insoluble ash, frequently give the student a new viewpoint as to the importance of inorganic salts in galenicals. Hydrogen ion concentrations are also mentioned here.

The extraction of a drug, usually the same as used for moisture and ash determinations, by selective solvents is the next step. The modified Dragendorff method is employed. Using a continuous extractor or percolator, a convenient quantity of the sample is extracted with petroleum benzine and the amount of the extract or residue determined semi-quantitatively. At this time the student is given a series of experiments dealing with the physical and chemical properties of fats, volatile oils and mixtures of the two. As a library assignment, the definitions of the words and terms relating to them, such as soaps, saponification, spirit, etc. are required to be put into their notebooks. The student also makes a list of all tinctures, fluidextracts and extracts that are made, using petroleum benzine, giving the reasons for its use.

The above extraction is continued, using the drug just extracted by the petroleum benzine and not a fresh sample. Ether is the next solvent used. The same procedure is repeated that was used in the case of petroleum benzine. Thus they continue with alcohol, water, dilute acids and finally dilute alkalies. After water, the preparations made with alcohol-water menstrua are listed.

In the above experiments the student is asked to list the constituents that he believes to have been extracted by the specified solvents. This is done for all of the official preparations. Of course, he will not remember all of this data, but the general facts will remain with him.

The making of small quantities (two to four fluid ounces of each) is then given some time and study. Finally the miscibilities or incompatibilities of a number of the preparations of these classes are tested. Their own preparations are used as far as is possible.

Thus the student has had a chance to learn something about the chemistry of plant products and to correlate this information with his study of plant extractives. This information gives him the ability to properly mix, if it is possible, two or more of such preparations if the need arises in prescription work. It also gives the student an appreciation of this class of preparations. A fluidextract or a tincture is no longer just another liquid to be poured from one bottle to another.

Are Pharmaceutical Services Available and Adequate in the United States?*

CHARLES H. ROGERS

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It is my privilege this afternoon to contribute to the discussion by presenting the views of the pharmacist on the subject "Are Health Services Adequate and Available in the United States?" Any statements that I may make, are predicated upon the facts that professional pharmacy is an integral part of the health sciences and that it is indispensable to any program designed for a more perfect coordination of those agencies devoted to the prevention of disease and to the healing of the sick. The question as it was originally propounded, embraces two very important health problems, and because I am to discuss them from a pharmaceutical view point, I ask your permission to restate the question in two parts as follows: First, "Are *Pharmaceutical* Health Services Available to the Public?" and, second, "Are *Pharmaceutical* Health Services Adequate in the United States?"

The fact that in 1935 there were 56,519 drug stores serving a population of about 125 million, cannot be accepted as *prima facie* evidence that professional pharmaceutical service is available in all of these establishments. In entirely too many of them is the ancient and honorable profession of pharmacy greedily exploited for personal gain. For those who so prostitute it, we hold no condonation or excuse and the sooner steps are taken to expose such masqueraders, the sooner will reliable practitioners feel solid ground beneath their feet. Those who exploit pharmacy must not be confused with those who are conscientiously practicing their profession but who, for business expediency, have been forced to engage in the sale of articles of merchandise other than drugs, medicines, and medical supplies. Economic conditions have forced them to function in the dual capacity of a professional man and a genteel merchant, but that does not preclude them from being highly efficient professionally. Despite the fact that this is true, not an inconsiderable number of laymen and physicians are skeptical not only of the professional capabilities of phar-

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macists but also of the health service that they are daily rendering to them. The indiscriminately displayed evidence of the invasion of commercialism in pharmacy is largely responsible for this misconception. However, it should not be forgotten that commercialism has penetrated, to a greater or lesser degree, nearly all of the professions regardless of how dignified and honorable, and that it does not follow that the practitioners have been so besmirched that they cannot function efficiently in their professional capacities. Those who have had the opportunity of comparatively evaluating pharmaceutical service to physicians and laymen over several decades, are astounded at the rapid advances that have been made during the past decade. Definitely, pharmacists are becoming more and more "profession-conscious" and when pharmacists who are qualified by training and experience become conscious of their professional responsibilities, their contributions to a more perfect health service will increase greatly. Furthermore, the ever increasing rigidity of state board examinations for license to practice pharmacy, the marked advances in educational requirements, and the exercising of greater selectivity among those desiring to become pharmacists, are assuring physicians and laymen alike that their pharmaceutical needs will be administered by capable and qualified men and women. Some general idea of the *availability* of professional pharmaceutical service may be had by citing the situation in Minnesota. There are about 1,100 pharmacies, each one serving a population of approximately 2,300. The rural and urban distribution of these pharmacies is also quite satisfactory. This data is rather typical of most other states. In brief, pharmaceutical services of a quality far above that which they are conceived to be, are quite universally available to both physician and layman.

Second, I would like to say a few words about the *adequacy* of pharmaceutical service, first, to physicians and, second, to the public. To be adequate, a condition must exist which is equal to or sufficient for some specific requirement. In our rapidly changing economic and social world of today, the services of any particular one or all groups of the health sciences may be adequate and modern today and inadequate and antiquated tomorrow. During the past five or ten years economic changes have taken place so rapidly that it has

been a veritable impossibility for the health sciences to adjust and accommodate themselves in any degree commensurate with the needs. Even though the respective national, state, and local professional organizations have tried to the best of their abilities to coordinate their own efforts so as to keep pace with the changes and to adapt their individual contributions to a better health service, until recently the only results have been to lay the matter on the table—and this with the hope that some Moses might rise up and lead *the people* of this country back to the green pastures of a decade ago. The practitioners of each individual health science have been too concerned with the problems confronting their own profession to think about the troubles of their sister professions. They forget momentarily that the ideal health service to the patient involves a perfect coordination of *all* health groups in whose functioning no particular member is paramount to or independent of the others. Had there been some coordinating agency such as a council or planning committee of the allied health sciences, composed of men and women who would see the forest without permitting their views to be obstructed by the trees, the adaptation of our health services to people living under metamorphosed social and economic conditions would have been greatly facilitated, the individual rights and privileges of practitioners in all fields would have been better protected, and we would not be faced with as large a problem of coordination and adaptation, as we are today.

Despite the fact that less than one per cent of all drug stores are strictly professional establishments, the pharmaceutical service to physicians, in so far as compounding prescriptions is concerned, is reasonably good. However, the trained pharmacist is qualified to contribute *much more* toward a more perfect functioning of our health program. He has been trained to do bacteriological work, to carry out analyses of drugs, urine, blood, feces, etc., and to practice professionally in many other ways that would be of assistance to a physician. So seldom have the pharmacists been requested to practice these phases of their profession that most of them have come to the logical conclusion that there was no demand by physicians for such services. Recently, I was agreeably surprised to learn how much work of this kind was being done for the rural physicians by rural

pharmacists in Minnesota. In short, the present day pharmaceutical service is apparently adequate to satisfy the demands made upon it by physicians. If these demands should increase in both scope and quality, I am confident that pharmacists will be prepared to meet them.

In so far as the *adequacy* of pharmaceutical service to the public is concerned, much could be said. The almost negligible number of deaths and injuries resulting directly from mistakes made in the compounding of over 165,000,000 prescriptions a year, would indicate that in this specific phase of pharmaceutical service the layman is adequately safeguarded. This may be explained in part by the general public being particular and very discriminating in the selection of physicians, nurses, and pharmacists in case of sickness. The influence of so-called side-lines upon the public's conception of the character and quality of available pharmaceutical service in pharmacies may possibly be indicated by the fact that in 1929 prescription sales constituted 9.2 per cent of the business of drug stores with fountains; 18.6 per cent for stores without fountains; and 6.7 per cent for stores without fountains operated by chains; the average for all drug stores being 12.2 per cent. In this connection it might also be noted that of the 56,519 drug stores in the United States, only about 400 are strictly professional establishments. Yet, those 400 pharmacies (less than 1. per cent of the total number of drug stores) compounded between 6 and 7 per cent of all prescriptions written during a year.

In the past, pharmacists have not taken advantage of the strategic position that they occupy to disseminate sound but not too detailed information on health problems. Pharmaceutical health service to the public can *never* be described as *acceptably adequate* until this phase of their responsibility as an essential member of the Health Science group is developed and properly discharged. It has long been recognized that one of the most important steps in clearing up personal and public health problems is to create an intelligent public. To do this, it is necessary to educate people in the principles and rules designed for the promotion and preservation of personal and public health. Because of the large number of persons contacted in the practice of his profession, the well-trained pharmacist is in a unique position to perform this important office. At no other time in history has the public

been more "health-minded". Sound advice as to rationality of consulting a physician in case of sickness, recommendations on matters of personal hygiene, sanitation, contagious diseases, and public health, together with diplomatically allaying or dissipating the inherent fears held by laymen of physicians, dentists, and hospitals—all, must be included in a perfect and adequate pharmaceutical health service to the public.

A few moments ago, I referred to the establishment of state and national councils or committees of allied health sciences. I believe that one of the problems that should be studied by such a committee is the reduction in the cost of medical care. In this connection, whether we are willing to acknowledge it or not, there is always the possibility in our rapidly changing economic and social world that this may become necessary in order to circumvent a wave of popular opinion in favor of socialized medicine. I believe that *one* of the most, if not *the* most important factor that may instigate and catalyze such a human mass reaction, is the rather high cost of properly caring for the sick. The health science fraternity believe in preventing and treating diseases by logical, scientifically-based procedures that permit of no guess work. These procedures must be made available to all classes of people at a cost that is commensurate in some degree with their incomes but, at the same time, it must assure an ample return to the practitioners for their heavy educational investment and their special capabilities. A small income together with a natural antipathy toward becoming a charity patient is the principal reason why so many persons resort to self-medication and, in general, pursue the wrong course in dealing with their ills.

Not infrequently I am asked what I believe the pharmaceutical set-up would be under a universal plan of socialized medicine. It is not difficult for me to visualize the B-carotene molecule with its 40 carbon atoms and to understand how it is changed in the animal body to the less impressive 20 carbon atom vitamin A, but, for the life of me, my imagination is too limited to conceive of a health plan in which there would be state owned and controlled pharmacies giving service commensurate with that of today. The organization might include professional dispensaries for every five or ten thousand population—much like the privately owned although

governmentally restricted continental European apothecaries; it might have pharmacies in connection with district medical and dental clinics; but, regardless of whatever plan would be devised, I now believe that it would be in conflict with individual professional rights, that it would interfere in the exercising of professional prerogatives, and during the very long period necessary for adjustment, that the public would suffer for want of an adequate pharmaceutical health service. The pendulum should not be allowed to swing too far in the opposite direction. All that may be needed to bring about a rational solution of the problem is a willingness on the part of all health practitioners to cooperate unselfishly with one another so as to give the best possible medical, dental, pharmaceutical, and nursing care to those who are in need of it.

Research in Pharmaceutical Manufacturing*

(Types and where to have them done)

ANDREW G. DuMEZ

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You as pharmaceutical manufacturers are assembled in annual convention to confer on matters of common interest, and among the more important of these matters are the improvement of the products which you manufacture and the search for new and better products to replace those which use or knowledge acquired subsequent to their introduction have demonstrated to be of little or no value. It is not only logical, therefore, but essential to the promotion of the welfare of the industry that the subject of research be one of the items comprising the program of these meetings. Failure to find it listed among the items for consideration might lead to the inference that your interests are wholly mercenary and that you do not have a proper appreciation of your obligation to the physician or the public.

Research is defined in Webster's Dictionary as: "Studious inquiry or examination; specifically and usually, critical and exhaustive investigation or experimentation having for its aim the discovery of new facts and their correct interpretation, the revision of accepted conclusions, theories and laws

*Read before Pharmaceutical Manufacturers Association, Miami, 1937. Published in this Journal by request of the Editor.

in the light of newly discovered facts, or the practical application of such new or revised conclusions, theories and laws."

In the light of this definition, it is obvious that research is limitless in its scope and in the variety of its ramifications. As a matter of fact, a host of workers scattered over the greater part of the earth are engaged in its pursuit and nearly every natural phenomenon and human activity have been subjected to it with nothing more to show for the energy expended than a mere scratching of the surface when compared with the possibilities still to be unearthed.

I will restrict my remarks to those which pertain to the kinds of research which you as pharmaceutical manufacturers might find it advisable to undertake or promote and to the institutions best equipped to carry out the different kinds of research work which you may desire to have done.

As I visualize it, research which is a necessity and that which can be made a valuable adjunct to the pharmaceutical manufacturing industry may be conveniently classified as follows with regard to type:

- | | |
|---------------------------|-------------------|
| a. Business or commercial | d. Pharmaceutical |
| b. Chemical | e. Botanical |
| c. Pharmacological | f. Clinical |

Business or commercial research is essential for the efficient conduct of the business end of the industry and to the proper management of its finances. It embraces such activities as market studies, business surveys, economic investigations of new projects and processes, plant locations, patents, production costs, investigations of methods for increasing consumption and studies or investigations of the other factors which play a part in competitive production and merchandising.

Some of these studies and investigations, as for instance the investigation of production costs, must of necessity be made within the plant. If you do not have in your employ a sufficiently well trained staff for this purpose, time and money will be saved by calling in experts from the outside.

Studies and investigations of conditions which obtain and of factors which operate outside of the plant can best be conducted through the employment of experts in their respective fields or through research grants to universities and research institutions which have on their faculties the experts required.

Research pertaining to patents should be entrusted only to an attorney, specially trained and experienced in that line of work. Manufacturers who are not large producers usually do not have a person with this training in their employ and service of this kind is expensive, but it rarely ever pays to employ a cheap patent attorney.

Chemical research is a necessity where the items produced are chemicals or combinations of chemicals or where the therapeutically active constituents are chemical entities, and that includes nearly all medicinal products with the exception of serums and vaccines, toxins and antitoxins and most of the glandular and tissue products. Chemical research is necessary for the purpose of improving products and processes of manufacture, of maintaining uniform standards of potency and as a protection against counterfeiting and substitution. It includes experimental studies of the synthesis of new compounds, the development of qualitative and quantitative tests and the improvement of old ones, et cetera.

In establishments which have but meagre research facilities or where the staff of chemists is too small to permit of doing other than routine work, it is necessary to seek elsewhere for assistance in developing new products and processes of manufacture. Reliable and efficient assistance of this kind can be obtained through research grants made to carefully selected universities and research institutions maintaining departments of chemistry and chemical engineering. It is usually safe to base your selection on the reputation of the institution and particularly on that of the department in which the work is to be done.

In recent years, some of our schools of pharmacy have advanced to a position where they can now undertake a limited amount of work of this kind if it is adequately financed. Those of you who have work of this kind to farm out may find it well worth your while to give some of it to these schools of pharmacy. You may discover that the friendly atmosphere and kindred spirit to be found there will more than make up for the advantages which the more highly touted institutions may have to offer.

With regard to the improvement of old methods of standardization and the development of new methods, I have the same comment to offer as was made relative to the development of new products and new processes.

For most of the products, which you as a group manufacture, there are no official standards. Therefore, it is necessary for you to develop your own standards or to do without. This places you at a disadvantage in a competitive field as the physician is loathe to accept products, the standards for which have not been set by some generally recognized standardizing agency. For this condition, I have no remedy to offer, except to refer you to the American Pharmaceutical Association. Until quite recently, that association maintained a committee on unofficial standards and it is now contemplating establishing a laboratory for research as a part of the machinery for the revision of the National Formulary. Speaking unofficially and only as an interested individual, I will say that this contemplated new venture of the American Pharmaceutical Association seems to possess possibilities for growth that might be worth investigating.

Pharmacological research is so highly specialized in nature and requires so much expensive equipment and space that only manufacturers whose volume of production is large or who produce a variety of products which must be controlled by pharmacological methods can afford to make provision for it in their plants. Until quite recently, the only sources of help open to those of you, who had comparatively small amounts of this work to be done, were the pharmacological laboratories of the medical schools, and the assistance which you obtained from these sources was not always entirely satisfactory because the scientific staffs of these laboratories are primarily interested in qualitative pharmacology and have had little or no training or experience with the methods and technique of quantitative pharmacology. Here again some of our schools of pharmacy are now prepared to serve you. Without any desire to be boastful and only for the purpose of making my point, I call your attention to the fact that the School of Pharmacy of the University of Maryland has the only laboratory in this country so far as I know which is especially designed and equipped for quantitative pharmacology, i.e., physiological assaying.

And, now let us consider for a moment pharmaceutical research. Some of you will contend that there is no such thing but I contend that there is. Investigations which have to do with the mixing of medicinal substances with other substances to improve their palatibility or to increase their

stability, the determination of the rate of deterioration under varied conditions of transportation and storage, and the tolerances to be permitted in active ingredient content or dosage seem to me to fall within the province of pharmaceutical research.

The logical and I believe the best places to go for help, when needed, for solving problems of this kind are the schools of pharmacy. If you are at a loss to know which school to go to, write to Dean Ernest Little of the Rutgers University, School of Pharmacy, Newark, New Jersey, who is Chairman of the Executive Committee of the American Association of Colleges of Pharmacy, and who I am sure, will supply you with the information necessary to make your decision.

I have included botanical research in the list of types because it occurred to me that many of you make use of vegetable drugs in the products which you manufacture and that you might find it desirable at some time to have studies made on the authenticity of these drugs or on the possibilities of growing them. The schools of pharmacy are practically the only places where research in these fields is being carried on. Nearly all of our schools of pharmacy are equipped to do creditable work in pharmacognosy and a number of them maintain fairly extensive gardens where experiments in the cultivation of medicinal plants are carried on.

This brings me to the last type of research on the list, namely, clinical or therapeutic research. I need not define this type of research for you because all of you are already engaged in it to some extent. You are all aware of the necessity for having it done, i.e., you know that, regardless of the number or duration of the tests performed on the lower animals, products are not accepted by the physician or the public until they have been tried out on the human guinea pig. For reasons which are obvious research of this type can only be carried on to good advantage by the practicing physician. Your problem in this regard is to induce reliable physicians to undertake this work, and I use the word reliable in the sense that implies good training in making observations and carefulness in recording results.

Regardless of which of the foregoing types it represents, research must be planned, the work must be coordinated and

the findings must be correctly interpreted if it is to be made to produce the maximum benefits. The requirements in these respects are the same whether it is done within the plant or on the outside but the methods employed in achieving these ends will, as a matter of course, be different. In either case, it will be necessary to set up separate and distinct organizations in each plant for carrying on this work. This organization must be a separate and distinct department and must not be loaded down with routine work. Furthermore, you must be prepared to finance this department over a period of years with the knowledge that immediate benefits may not be forthcoming because epoch making discoveries are only made now and then and even those of lesser importance are not made with clock like regularity. Furthermore, you must not expect to accomplish a great deal with a one man department, since even the most simple problem may have many ramifications and progress in solving it may be exceedingly slow when but a single person is engaged in its solution.

I have described for you in a brief and somewhat sketchy way the kinds of research which you may require to have done and I have directed you in a general way to the places where you may expect to have the research which you cannot carry out in your plant done to advantage. If I have succeeded in attaining these ends in a way that will prove to be informative or helpful, I shall be happy. There are, however, two other objectives which I set for myself. One of these is the necessity of making provision for carrying out systematic research and the other is to express in an emphatic way the opinion that you should make greater use of the facilities now offered by our schools of pharmacy for the research which you may find it necessary to have done outside of the plant.

English for Pharmacists

The Teaching of English in Schools of Pharmacy*

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On the door leading to the class rooms of the School of Pharmacy of Western Reserve University are two gold-lettered words, one beneath the other: Pharmacognosy. English. The words indicate the two departments located here, yet to the casual passerby, pausing to comment, they suggest a special kind of English, whose peculiar habitat is a School of Pharmacy.

Is there such a subject as Pharmacy English? One trusts not. The language spoken and written by the graduates of our schools does not, or at least should not, differ from the language used by other educated men. The books they read, in the moments torn from the perusal of the *Pharmacopoeia* and the *National Formulary*, are those read by their peers. Our chief responsibility, then as teachers of English, would seem to be to give our students so firm a foundation in the principles of speech and writing, as well as in the appreciation of good reading, that in both their professional and social relationships they would rank as cultivated men. "What, you mean that pharmacists have to take English? Well, they certainly need it." This is a comment heard less frequently of late, but one which should not be called for at all.

There is no such subject as Pharmacy English; yet the fact remains that English in a school of pharmacy should be—obvious as it may sound—primarily for pharmacists. It should consider their particular needs, although these needs may not as yet be expressed or realized. The students in our classes today are enrolled for a four-year course, with the degree of Bachelor of Science as their goal. They wish to be considered professional men, whether their work is to lie in the retail store, the hospital pharmacy, or the research laboratory. They will have an increasing leisure in which to develop their individual lives. The men and women in the other health professions, doctors, dentists, nurses, with whom they will be associated will have had from two to four years of work in a college of liberal arts before their four years of

*Written for this Journal at the request of the Editor.

professional training, and they must not feel at too great a disadvantage with them. For these students a course should be planned that will not, on the one hand, be so narrow that it considers only their professional requirements, nor, on the other, be so vaguely cultural that it fails to have any connection with them.

Certain obstacles face us at the outset. The average freshman who enrolls in a school of pharmacy is not primarily interested in English. He may even be definitely antagonistic. He is, presumably, a science major, and thought he may not shine in chemistry he recognizes its relevancy to his chosen career. What, indeed, has English to do with the filling of prescriptions? One freshman may be permitted to speak for the many: "Of all the subjects that engrossed me in high school I cannot truthfully say that English was my grand passion." And another, whose interests are clearly not cultural, utters this lament: "English, mathematics, and botany, all comprehensive subjects, thoroughly discourage one and leave him in an uncertain state."

The question of whether the English courses should be taught within the school of pharmacy itself or in the university is one which can not be ignored in this paper, although it cannot be answered. Probably in most of our schools there is no possibility of choice, and, even when there is, the varying circumstances would have to be taken into consideration. Inevitably, there must be advantages and disadvantages to either arrangement. At Western Reserve University conditions have dictated the teaching of English within the School of Pharmacy, although our students take their chemistry, mathematics, and foreign languages in University classes. The benefits derived from such a plan can be suggested only by setting down in broad outlines the work of the Pharmacy English department at Western Reserve University. My hesitancy in doing so is due to the fear that to the slightest extent the courses so outlined should be assumed to be models. The main purpose of this paper is to provoke discussion. If it should bring suggestions or objections from others concerned with the teaching of English to pharmacy students, something might come of it which would be of definite value to us all.

As far as objectives go, the courses in English at Western Reserve are planned to meet the broad needs of the students.

In this school, even in the days when a pharmacy degree could be gained in two years and pharmacy was that much nearer a business than a profession, the work in English was never considered "Business English". For as long as the School has been a part of the University, the English department has been the chief agent of culture, of "sweetness and light", in an atmosphere necessarily impregnated with chemical experiments, with the identification of crude drugs, with the manufacture of tablets and ointments. It has assumed the responsibility of training for living as well as for making a living, of preparing for that increased leisure which must come—even for pharmacists.

English is a catholic course wherever it is found—in a professional school it must be particularly so. Without neglecting the practical side—and that side is to be developed later—no other course can so naturally take the lead in questions of good manners and good taste and of taking advantage of the cultural opportunities of the university and city.

Suggestions in these matters cannot be covered and dismissed at any one time, but are introduced throughout the year. Occasions are naturally provided. After the luncheon to welcome the freshmen and before the Parke-Davis or Eli Lilly trips, at the time of the girls' tea and the student council dance, interest is already aroused concerning table manners, introductions, the responsibility of contributing one's share to the conversation, and like matters. Letter writing, particularly social notes and the letter of application, brings up other points of social usage. At Reserve the pharmacy freshman classes go each year to the Cleveland Museum of Art, and the junior class visits a special exhibit. A few students are induced to attend the Playhouse or a special lecture through the privilege of substituting their reports for a regular theme; special problems send them all to the University library. In this phase of the English work, as in others, still more might be accomplished through the further support of the faculty. When our dean comments on an opera or play he has attended, when a popular professor of chemistry expresses shocked surprise that some members of his class have never been inside the Art Museum, the recommendations of a feminine English teacher are strongly enforced.

Within the last three years certain inexpensive pamphlets

have simplified and strengthened the somewhat extraneous sides of the work. *The Technique of Good Manners* has been used as a reference for questions relating to etiquette and personal appearance, and other handbooks are recommended. *The Students' Guide of Efficient Study* is another required, though unrelated pamphlet, which is useful at the beginning of the year, since it treats such practical matters as planning work, note taking, and learning to concentrate.

Granted that any social and cultural contributions that can be made by the English courses are of particular value in a professional school, they must not be developed at the expense of the practical side. Our students must be trained to speak and write clearly, accurately, and with reasonable effectiveness; they must be trained to read with understanding and, wherever possible, with appreciation. Indeed a disproportionate amount of time must be spent upon the mechanics of English. The foundation which should have been laid in grammar and high school is possessed by only the exceptional college freshman, and often his family background and his environment are a handicap rather than an aid. The problem is not, it may be said, peculiar to a school of pharmacy, but it exists here and has to be faced.

Courses in Freshman English must resemble each other so closely that no one needs to be described in detail. The broad outlines alone will be indicated, and the emphasis placed upon those features which are particularly pertinent to our needs. The principles of composition are taken care of by the text which is used throughout the year. The perforated sheets of this text provide a thorough drill on fundamentals and conserve the students' time. When these are corrected and the analysis of the results brought before the class, an attempt is made to stress only the more serious errors and to avoid the niceties of the purist. The mechanical elements—punctuation and grammatical construction, for example—are not considered as ends in themselves, but as aids to good sentences and hence to a more mature and flexible style. The need of clear thinking as a basis for clear writing must have been deeply impressed on the mind of one unhappy freshman to account for the following: "I also find English one of the hardest subjects I carry. It makes one think different from what I do on other subjects. This subject English is a real battle. As I have mentioned above you have to think and think clearly."

Theme writing is naturally the backbone of the first-year course. One or two short themes a week are required the first semester, with longer themes the second semester, each theme being corrected or rewritten and checked in conference. (The conference periods vary in length and frequency with the individual students, but they are held for all.) The type assigned is chiefly expository, a type which calls for definite structure; but, for the material, the writer is encouraged to draw upon his own interests and hobbies, experience and background. A limited time is devoted to letter writing, business and social, with the point always made that for the technical forms of business correspondence—sales letters, complaint letters, and others—a recent text on the business letter should be consulted. Place is found for drill in vocabulary building and the intelligent use of the dictionary. Too little place can be found for oral talks, yet they are given whenever possible, particularly on outside reading.

Two written projects of the first year—the term paper and the library problem—have been adapted as far as possible to the interests of our students. The term paper provides an introduction to the technique of research, scientific or literary. It involves, in addition to careful organization, insured partly by the sentence outline, practice in the finding and handling of source material, the taking of notes on cards, the arrangement of footnotes, and the preparation of a bibliography. The subject matter may be drawn from the field of pharmacy but not necessarily so—there is still plenty of time for that. The appeal to the student is often made through giving him the opportunity to investigate a subject in which he is already interested, a hobby he has already made his own. It may be the breeding of tropical fish or the developments in color photography, the building of model airplanes or the cultural achievements of his race—whatever the subject, this experience in the organizing and writing of a simple research paper should stand him in good stead in future courses and in personal investigation. It may also lay the foundation for an enduring interest which will bring its own reward.

The library problem is assigned at the beginning of the second semester some weeks before the term paper to which it is allied. Primarily, the project is designed to introduce the student to the tools of scholarship in any field, though

particularly in his own, so that he may know the feel of them when he is called upon for simple research papers or reports. It helps also to impress upon him that the fact of being perfectly at home in a laboratory is no reason for feeling ill at ease in a library. Many of the questions are adapted to his professional interests. Let me illustrate by a few examples. The mechanics of the card catalogue are revealed through the preparation of a bibliography of histories of pharmacy, and through the listing of bibliographical data on such books as *Microbe Hunters* and *Rats, Lice and History*. In the *Encyclopedia Britannica* the article, "Alchemy", may be looked up and the author and bibliography noted; in the *Encyclopedia of the Social Sciences* the article, "Medical Materials Industry," is investigated and the cross-references listed. Almanacs and Year Books yield information not only on the increase in automobile fatalities and the outstanding motion pictures of the preceding year, but on important achievements in medicine and chemistry, the recent trends in drugs, the locations of schools of pharmacy. The *Book Review Digest* may be consulted for critical opinion on such books as *Devils, Drugs and Doctors* or *An American Doctor's Odyssey*; readers' handbooks and anthologies of quotations for allusions that disclose pharmacy in literature; the *New English Dictionary* for the earliest uses of the familiar terms: apothecary, druggist, pharmacist. The *Reader's Guide* and the *Industrial Arts' Index* are used to prepare a working bibliography for possible papers entitled: Recent Food and Drug Legislation or Federal Regulation of Narcotics.

At Western Reserve the emphasis is placed upon the principles and practise of composition the first semester and upon the understanding of literature the second, but there is no marked division in the work of the year. Neither has it been found practicable to make the easy distinction between writing as a tool for practical and professional purposes and reading as a source of personal enrichment. Accurate and forceful writing has surely a social and cultural value and the understanding of the written word a practical. A recent text on Business English stresses the importance of imagination in business and urges its cultivation through the reading of the best prose and poetry. There is a point here, though it may be open to question if literature read for that ulterior end would yield very much to the reader.

The anthology now used throughout the year in our first-year classes contains examples of biographical sketches, essays and articles, plays, short stories, and poems, none earlier than the nineteenth century, the greater number of our own day. It supplanted another of the same type, largely on the grounds that *Florence Nightingale* would appeal to our students more than *Queen Victoria*. Likewise for *The Return of the Native* we have substituted *Arrowsmith*, in the belief that the picture of a young scientist driven by enthusiasm and curiosity to seek out the facts was of more significance for students of science than the tragic, fate-woven happenings on Edgdon Heath.

The advisability of giving a survey course in the second semester should, it would seem, be gravely challenged, at least in a professional school. There was a time—it is best forgotten—when we undertook to follow the story of English literature from Caedmon to Kipling, with results that were too often profoundly discouraging. The fuddled state of mind of the sufferer who wrote on his final paper: "The language of Beowulf is French, it was written during the Age of Chaucer to the ascension of Queen Elizabeth", may have been extreme yet it is also revealing. Nor is the mere ability to identify great names an end in itself. Its value for social purposes has been argued, as did the student who wrote that "very seldom does one attend a ball or a yachting party without some mention of the immortal works of Shakespeare, Milton, Chaucer, or some of the other famous poets of the day being brought up," but the contingency here raised is, for most future pharmacists, too remote to demand consideration.

More important is training in the ability to understand what is read, to grasp the point of view of the writer though it is remote from one's own, to analyze, condense, or restate in words that contain the spirit and intention of the original. To inculcate a love of reading, to kindle a desire to grasp the underlying thought of the author, to foster the idea that appreciation of literature, as of all the arts, is a matter of growth and continued contact—these are high aims, but we can probably come closer to attaining them if we devote the few hours we have to the writings that are close in time and in spirit to the students who read them. The use of the contemporary writing requiring as it does a minimum of bio-

graphical and historical background, makes it possible to concentrate upon the form and content of the work itself, and thus to come closer to some measure of appreciation.

"Outside reading" is encouraged in various ways. The pamphlet, *Good Reading*, published by the National Council of Teachers of English, eliminates the need of preparing book lists, although to it must now be added the books published since 1935 that can be recommended. Indeed, the natural appeal of a number of recent books is on our side. The cry of "No time", justified to certain extent by the long laboratory periods and necessary job, is a disheartening barrier; yet more needs to be done if that most rewarding of all habits, the habit of reading good books, is to be formed.

When the course in pharmacy was completed in two or three years, one year of English was all that could be included, regardless of the need. With the establishment of the four-year course leading to the B. S. degree and the consequent broadening and strengthening of the curriculum, the question of a second year of English can be seriously considered. A number of our schools have already done so. In at least six, two years are required, and in many more a second year is elective. Considering the natural trend, the second year, required or recommended, is to be increasingly expected.

Of what should that second year consist? The objectives of the first, candor would compel us to admit, are far from attained. Particularly does this apply to errors in grammar and diction. The defense is that crudities so deeply embedded that they have resisted the continuous war waged upon them through grammar and high school and have entered college can not always be eradicated in one year. They may not be disposed of in two, although we trust the amount of time devoted to the process has a direct bearing upon the result. Yet if the desires of the students themselves are to be consulted we shall not offer a second course in composition, not at least under that name. The mingled feeling of resentment and dismay a number will cherish over being expected to take a second year of English (there was a time when one year was considered an effrontery) will not be placated by the prospects of another year of theme writing. At the same time they may respond to a course that seems to them to have a definite connection with their future work as pharmacists.

From incomplete data compiled from a number of catalogues, it would appear that our schools have given different answers to the problem. A course in public speaking is the first choice of a number, with courses in expository writing and English literature following. A careful investigation of this question would be helpful.

At Western Reserve the experimental period of the second year of English may not have passed. For two years a combined course in public speaking and magazine article writing was required of all juniors; last year a one-year course, entitled Professional Speech, was made an elective but given a definite place in the curriculum. The writing course is now an elective of one semester, as are courses in the contemporary biography and the contemporary novel. There is no real expectation at present of encouraging students to take more than two years of English, although exceptions might be made.

The fact that the speech course this year was elected by the stronger students in the class leads to another important question. Might it not be wise deliberately to plan a course for these students we hope may be leaders in the profession, the men who in a few years may be on the faculties of our schools, editing and contributing to our journals, addressing and holding office in our associations and academies? Too few graduates of the two-year course are fitted for these positions, though such a statement must always be qualified by the admission that the amount of education is by no means the only factor in a man's success.

For the weaker students, those who make the English grade with difficulty but fulfill the science requirements sufficiently for graduation, some further experience with the fundamentals of composition should be arranged. One plan might be to require those students who do not elect the second-year course to take an examination in the mechanics of English, and, if they do not pass it, to take a brief, comprehensive review. It may well be that in those universities in which a sub-freshman or remedial course is required of all who do not pass the entrance examination in English, this procedure would be unnecessary.

The speech course at the School of Pharmacy of Western Reserve University is, to quote the catalogue, planned with particular attention to the needs of the professional student.

As a whole, the upper classmen welcome a course of this type, situations already encountered in the business and social world having convinced them of its importance. They feel, too, that the man who can speak clearly and persuasively, either informally in conference and committee or more formally on the platform, is a man to be respected. Gradually they discover that training in speech is training in other factors—organization, accuracy, logical thinking—no less needed but perhaps not so eagerly sought after.

The course as a whole is too orthodox in its methods to require presentation in detail. It emphasizes, as must every speech course, the ability to think on one's feet and to re-create one's thoughts with sincerity and conviction. It provides practise in the different types of speeches—the extempore, the impromptu, and the written, with the emphasis upon the first named. It provides training in the handling of group discussions, including the asking and answering of questions, in presiding over meetings and introducing speakers. It hopes also to produce discriminating audiences as well as performers.

With the effective delivery of the speech itself held as the goal, it is possible to weave into its preparation, drill in those essentials of composition—oral and written—that still need to be mastered. Definite organization is assured, or reasonably so, by the sentence outline or analysis which must be submitted in advance of the speech. New stimulus is provided for the exercises in vocabulary building, in pronunciation, even in the ruefully admitted errors of grammar and diction. Point is given to the finding and use of reference materials and to the employment of the other tools of research. Particularly satisfying is the increased zeal for good reading evinced in reports that are often stimulating as well as intelligent.

All this could be added to and expanded, but the main point of the course is still to be made. That lies, it seems to me, in the close relationship it has with the other departments in the School. Its title, *Professional Speech*, itself implies that relationship. It is carried out as far as possible in the form and content of the speeches assigned, though not without the realization that the word "professional" is broad in its connotations and that the professional man should not be inarticulate on any subject but his own.

Illustrations are needed. The broader interests of the pharmacist as an individual are expressed in informative talks on current events, civic and national problems, interesting people and books; in entertaining talks which at least win the approval of the audience; in talks to stimulate or convince on anything from the need of a new ping pong table in the lounge to the need of a new interpretation of religion. One series, in the form of a symposium, drew the composite picture of an ideal student of pharmacy, each speaker contributing one point. This model student would be interested in the history of pharmacy, investigate the opportunities in his profession, keep abreast of the latest developments in medicine and pharmacy, and—at the same time—take part in the activities of the School and University, take advantage of the cultural opportunities of Cleveland, keep informed of the news of the world, broaden his interests through general reading, cultivate a hobby, and so on through a formidable, if not an alarming, list of virtues.

The main talks of the year, those given at the end of each semester, were on subjects almost exclusively related to pharmacy. The first series, made up of the talk to actuate, was given during a long session, broken by recess and refreshments, and dignified by an augmented audience and especially appointed chairmen, ushers, and critics. The final series was composed of written speeches read before the class, with the idea that since actual speeches prepared for formal or professional gatherings are so often read, practise in doing so as effectively as possible would not be amiss. The written speech is, moreover, a valuable exercise in expository writing—it actually takes the form of the research paper—but was made more palatable for the student by being prepared for a definite audience and occasion.

It is gratifying to record that some of the talks have had immediate and tangible results. To one is due the reorganization this year of a student branch of the American Pharmaceutical Association. This branch during the University Open House sponsored a speech contest on the general theme of the Value of Pharmacy. From the president of the Northern Ohio Druggists' Association has come the proposal that a student speech contest be held for its members. Perhaps, in this connection, it can also be stated that two student publications—the *Pharmacon* and *Mortar and Pestle*—provided

needed outlets for papers and written speeches of special merit.

The correlation between the English courses, in particular the speech course, and other departments of the School of Pharmacy has been close, as this paper had attempted to point out. It could be even closer, with definite advantages for both. The dean and the other member of the faculty have cooperated in supplying topics for talks and papers, in responding to requests for interviews, in swelling the audience for special programs, in acting as judges in contests. They, in turn, should expect for their own classes a higher standard in oral and written reports, a greater measure of originality, a more interesting presentation.

The purpose of this paper has already been stated, but it may be referred to in conclusion. It was to formulate the aims and methods of one particular English department in the hope that ideas might be exchanged which would benefit all those interested in pharmaceutical education. If, as the editor of this Journal suggests, it should stimulate discussion at an expected conference on the teaching of English at the New York meeting of the American Association of Colleges of Pharmacy, its purpose will have been served.

Some Problems in Teaching Pharmacognosy

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When students fail to show proper interest in a course one of the first criticisms forthcoming is that the teacher has not been sufficiently enthusiastic himself and therefore the student could hardly be expected to show much interest. This criticism is aimed at the course in pharmacognosy perhaps more frequently than at other courses in the pharmacy curriculum. It is unfortunate but this criticism is probably true in many instances. If it is so there must be some underlying cause for such a condition. Certainly as a group pharmacognosy teachers should not be at fault in this respect more than any other group. Consider the case of the young teacher of pharmacognosy, who in the course of an introduction to one of our leaders of American pharmacy, told that respected person his field of work. The young

teacher was rewarded with uplifted eyebrows and the remark, "Oh, you're one of those fellows, eh?"

Talks with practicing pharmacists usually bring out the fact that they too consider pharmacognosy as a necessary evil that they had to endure in their student days. This feeling is often passed on to the students even before they take up the course, either from their contact with pharmacists before or during their school days or from talks with upper classmen. Pharmacognosy teachers are then usually handicapped even before they meet their classes for the first time.

A complication of causes is undoubtedly the basis for these adverse feelings toward pharmacognosy. An attempt at analysis may bring some of these causes to light and possibly suggest some remedies that may be of assistance to pharmacognosy teachers in developing interest and enthusiasm in a subject which is of great importance to the proper training of a pharmacist.

To begin with, the average student dislikes exceedingly the drudgery of memorizing an array of facts. Aversion to and fear of memory work is without doubt one of the greatest reasons why pharmacognosy is approached with distaste by the student and unpleasantly remembered by the pharmacy graduate. The simplest way to overcome this memory work problem is to eliminate much of the factual material that is seldom retained by the student beyond the examination periods. Assigned work which would necessitate training in referring to the official books could be used to replace the eliminated matter. Topics such as standards of strength, purity rubric and the like might be better handled in this way.

Of course the kind and amount of this type of material to be dispensed with should be judiciously chosen in order that no serious deficiency in total drug knowledge would result. A certain amount of memory work is desirable because it does help train the student's mind and much of the knowledge that is retained is of value to him, but too much of it will surely destroy his interest in the course. Therefore by reducing to a minimum the amount of memory work, the instructor in pharmacognosy may at the same time lessen considerably one of his greatest interest arousing handicaps.

Many types of students are easily interested in courses

that impress them as being practical and useful. Failure on the part of the teacher to stress the useful applications of pharmacognostical knowledge in the practice of pharmacy may also be one of the causes for lack of student interest. This practical application may be stressed in several ways. One is by considering the chemistry of the constituents of the drugs and suggesting the possibilities of incompatibility that may arise when the drugs and their preparations are used in prescriptions. Most pharmacy students are naturally interested in the filling of prescriptions and some of that interest can be utilized in the pharmacognosy course. This does not mean that a portion of the dispensing instruction be added to the already excessive amount of material in the pharmacognosy course. It simply means that in the course of study of the various drugs, that portion which will be of value as regards the relationship of groups of constituents and possible incompatibilities be pointed out to the student.

Another phase of pharmacy that often students, and others as well, are interested in is the money making side. The pharmacognosy teacher has a very good opportunity to make use of this natural interest. Most of the textbooks limit the commercial discussion of drugs to their commercial origins, or principal world markets, and sometimes include the amounts imported or exported in some particular year. This of course tells little about the economics of crude drugs. On the other hand if material is made available which deals with the various factors that influence the crude drug market assignments may be made so that the student may gain the knowledge necessary for buying drugs or their preparations advantageously. Thus valuable training in practical economics may be gained by the student and his interest is thereby stimulated. This type of matter may be obtained from past and current price lists, reports from the departments of Commerce and Agriculture and similar sources. The question of quality and adulteration as it affects price may also be included at this point but the determination of quality and adulterants should be left to the laboratory work. This method of creating interest is of course limited to those drugs whose prices are subject to fluctuation and whose commercial aspects are of sufficient importance.

Another difficulty in arousing student interest very often

lies in the fact that the student lacks sufficient background in prerequisite subjects to enable him to understand and carry out the technical aspects of the science as it is presented to him in the laboratory work. It is certainly very difficult to become enthusiastic about a type of work when one is not equipped with the fundamental knowledge and training necessary to carry it out intelligently. This is a special problem in schools where these courses are given as general university courses in which much of the matter of real importance to the future pharmacognosy student is skipped over lightly or eliminated altogether. The solution may lie in supplementing the general courses with courses in the pharmacy school designed to make up this deficiency.

In cases where the student does have the necessary background in fundamentals, close personal supervision and a laboratory manual or mimeographed instructions are desirable to maintain the student's interest. It is extremely trying for the student to attempt laboratory work if clear, understandable and explicit instructions are not at hand. In this regard a good laboratory manual covering a general laboratory course in macroscopic and microscopic pharmacognosy to supplement the texts we now have would undoubtedly be gratefully received by most instructors.

While only a few of the probable causes for a lack of interest in pharmacognosy are given here, perhaps their consideration may suggest others. By making a united effort to eliminate these as far as possible, pharmacognosy teachers will be able to improve the course in general pharmacognosy so that it may enjoy a popularity equivalent to other courses in the pharmacy curriculum.

EDITORIALS

Pharmacy and the American Association for the Advancement of Science

Relations of the American Association for the Advancement of Science to the organizations and workers in the field of pharmacy is a large subject, indeed, quite too extensive to be covered within the limits of an editorial. Even the opportunities I have enjoyed for many years of intimate contact with the Association have not covered by any means the subject of possible relations between the Association and any field of science. New possibilities continually arise and new relations open up which afford unexpected opportunities for the discharge of our fundamental function which is, as the name indicates, the advancement of science.

On the other hand, the considerations involved in the relations of the Association to pharmacy are not particular or limited in character. What has been or might be written of one field could, with a few changes in wording, apply with equal force to other fields of science. Pharmacy, properly considered, is truly a field of applied science, the extent and variety of which is often not fully considered. It is also a subject the beginnings of which go back to the earliest records of the human race and in all probability beyond those limits. Behind the witch doctor of savage tribes lies a mass of information accumulated through an unknown series of years which constitutes a substantial foundation, the real basis of whatever successful results he had in dealing with the true ailments of his group. His information was strikingly crude but has been verified in a marked degree by the experiments of his predecessors regarding the effects on the human system of the materials which he handles and his merit was measured by the success with which in his practice he has recognized the real and separated it from the false. The herbalist of the middle ages had risen above the witch doctor of savage times through sincere devotion to the search after new remedies and to the advance in general knowledge which through reason and experimentation had

shorn the ancient profession, in large part at least, of its desire to control by terror and incantations.

Today the pharmacist is confronted with a vast supply of new products, substances not only with changed names and revised formulae, but measured and standardized in a fashion that gives far better control than was ever known before. But beyond this, every day brings forth unheard of compounds, substances that never existed before and that have been built up to produce precise effects previously incapable of realization. The knowledge of the past is inadequate to handle the problems of the present. The worker in the field of pharmacy can no longer be satisfied or even safe with the limited training of the past. He must gain ground not merely in chemistry and among chemists but also in possibilities of understanding science in new and broader aspects if he is to discharge his duties properly and utilize the new opportunities for personal advantage and public service. He must be inspired, his views broadened by a richer, deeper understanding of the possibilities that modern science affords than he has ever had before.

This wealth of new materials at his disposal is accompanied by conditions that lay upon him greater responsibilities. The exploitation of these substances is often unmistakably commercial. Even under the best of circumstances their very newness leaves us uncertain with regard to their ultimate effects, and their utilization by untrained hands has been accompanied in well known instances by most serious results. The common practice of many in asking for some drug of which they only know that it is widely and artfully advertised, in order to remedy conditions of which they have at most a superficial and imperfect knowledge lays upon the pharmacist a double responsibility and demands broad training and ability to discriminate between the safe and the unsafe with full appreciation of the consequences of error. For such purposes the student of pharmacy finds the appeals of the salesman and the arts of the optimist are poor training. Indeed, one may safely say that present day conditions in pharmacy furnish greater dangers for society than in the recent past and some added protection must be found to guard the public against the misuse of the products of modern scientific research.

One of the important lines of development in science is

certainly greater emphasis upon those agencies which bring together workers in different scientific fields and are organized to interpret the results obtained in various lines, both to workers in allied sciences and also to the general public. Men frequently lament that society in general is so little informed and so scantily appreciative of the advances of science and the possibilities given for higher average well being.

The American Association for the Advancement of Science is not only the largest, but the only nationwide general organization devoted to assembling workers from all fields of sciences for the discussion of problems in individual lines. Through its meetings it seeks to interpret broadly the results of study and research in one field to workers in other lines and to the public which all seek to serve. Its own programs are in the main devoted to presenting significant results of recent research. In discussions and symposia the relations of such results to other fields of science are presented and interpreted. In this way fields of pure and of applied science gain knowledge and direction for their further work.

By virtue of content and development pharmacy is intimately connected with various aspects of many other sciences. Its workers will profit by opportunities to learn at first hand of new lines of research and new results obtained in other fields. Moreover presentations of its problems will stimulate other workers to recognize undeveloped lines in their own fields and to seek to interpret new relations. Thus the American Association for the Advancement of Science serves to develop in the Section on Medical Sciences and in the subsections on Dentistry and Pharmacy phases of these subjects not ordinarily considered in clinical and technical societies in the confident expectation that thereby the future activities in these fields may be broadened and deepened.

But the sessions themselves do not represent by any means all of the opportunities afforded by the Association for the discharge of its important functions. The magnitude of its power is not measured by the roll call at individual meetings. Indeed, the attendance on particular occasions is conspicuously regional. Yet by adjustment of the series of meetings well in advance and by their distribution widely over the country, an ever increasing circle of members is brought into contact

with the organization and a larger membership served than would be possible otherwise. At the same time contact is maintained with all members through the distribution, as a membership privilege, of its various publications. In this the weekly publication, *Science*, is undoubtedly the most important element bringing, as it does at brief intervals, to the attention of all the subscribers not only the notice of plans for each meeting, but also personal information regarding scientific happenings in affiliated societies, institutions of learning, research laboratories and independent scientific gatherings. It prints also some of the leading addresses delivered by prominent scientists at meetings of the Association and on other occasions as well as brief notices regarding individual researches. The *Scientific Monthly* which appears less frequently gives those who prefer it more extended addresses and discussions of scientific achievement and summaries of advance in particular fields.

Through your own technical societies and their publications, among which I should mention especially the new *American Journal of Pharmaceutical Education*, serving publicly the faculties and students of colleges and pharmacy, more complete information regarding technical advances is provided in the individual field of your subject, but if adequate work is to be done in any field of science, if you are worthy of the profession in which you are engaged and are serving it adequately, you must acquire further knowledge of associated subjects and of advances in standards in all fields. The last half century has seen tremendous progress in the development of knowledge and its application in varying fashion to human welfare. If that advance is to be continued, if its followers are to contribute their quota in extending the limits of knowledge, they must in some effective way be in contact with progress in other fields. Many unfortunate results follow upon failure to achieve broader contacts not the least of which is that the small society working alone and without relation to larger undertakings exercise relatively little influence on public opinion. That the American Association, with its nearly twenty thousand active members and with more than seven hundred fifty thousand members in affiliated societies, is a power will be appreciated without further emphasis. Its voice properly expressed is heard above the din of conflict of opinion. It has exercised its influence

with evident success in the past and with greater prospects for the future in the development of both pure and applied science with appropriate emphasis upon research as fundamental and with the ultimate objective of advance in human welfare. It seeks to associate with itself all those who have a living interest not merely in furthering personal aims but primarily in contributing to social progress.

Henry Baldwin Ward,
Retiring Permanent Secretary,
American Association for the Advancement of Science.

University Control of Professional Education

At a conference of deans held in connection with the annual meeting of the American Association of University Professors, Dean C. B. Lipman of the University of California discussed "Professional Associations and Associations of Professional Schools and Some Problems They Pose for American Universities." He opposed strongly the activities of professional organizations in attempting to standardize and control professional education as the following paragraphs, taken from the Bulletin of the American Association of University Professors for May 1937, show.

"It is the view of the professions that in addition to such regulation as the state may exert on the training of professional men and women the profession itself through its own associations and through those representing the schools of the profession shall be the sole arbiter of the standards of teaching, the curricula, and other considerations involved. It is my view, on the other hand, that each university must determine how far it follows and to what extent it digresses from the requirements for a professional school promulgated by the profession; and it must be free to do so without penalty of black-listing its graduates and in other ways penalizing it for its desire to solve its problems in its own way. The university is the place to do this for several reasons:

1. It has the broadest outlook of any agency on problems of training young men and women.

2. It has a set of conditions under which to carry on its work which may be markedly different from those of other universities.

3. It has at its disposal the very latest results of research which bear vitally on the making of curricula and other requirements. This is something which the profession rarely has, and the professional school association alone may also lack it.

4. It is rarely free from the kind of factional strife which all too frequently characterizes professional associations.

5. It must deal justly with all the professional schools within its circle as well as with many other departments as regards budget, buildings, etc. It can not do so if powers outside itself coerce it into magnifying the importance and increasing the allowances of one school as against another.

"But above and beyond all this stands our experience to remind us that strict prescription of programs for professional schools runs counter to the spirit of the university which should be par excellence the exemplification of intellectual freedom . . .

"I believe that it is high time that the universities present a united front to the associations of professional schools and to the professional associations which attempt to control them. I believe that it is the universities that should determine by joint committees of professional and academic men the general pattern of requirements for the professional schools which are attached to them and this should not be done by the professional school associations or the associations of professional men. I think that the administrations of universities are bound to be more objective and clearer of vision than the associations and yet have at their disposal all of the professional advice which they may need in making decisions in such matters. It is the case at the present time that representatives of any professional group in a given university may serve on committees which are formulating requirements and curricula without consulting in any way the universities to which they belong, thus saddling upon their institutions sets of requirements which sometimes may prove to be unfair, unjustified, and a serious incubus to the university."

—Selected from the Bulletin of the American Association of University Professors, May 1937.

Hasn't Changed

Two years ago Charles R. Walgreen, wealthy head of a chain of drug stores, caused his niece to drop out of the University of Chicago. He charged that the school was engaged in "red" activities. His charges and the fuss raised over the incident precipitated an Illinois legislative investigation of the school. The committee cleared the institution of the charges and the things resumed their normal quiet. Later, Mr. Walgreen's niece re-entered the school.

Since that time Mr. Walgreen has not changed his mind, nor has the school changed. Yet only the other day Mr. Walgreen made the school a gift of more than half a million dollars, \$550,000 to be exact. In effect his gift amounts to half again that sum, since the university possessed a conditional grant of \$275,000 offered by the Rosenwald foundation on condition that twice the sum be raised privately. The Walgreen donation was the exact sum needed to give the school permanent possession of the Rosenwald offering.

Thus is founded the Charles R. Walgreen Foundation for the Study of American institutions. It is to be supported from the income of \$825,000. The earnings of this fund should enable Chicago university to employ an eminent scholar as director of the course.

Mr. Walgreen is an ardent American. He believes that it is a matter of first importance for every American to be given a thoro education in the principles and backgrounds of our institutions. He indicated two years ago that he did not think Chicago university was accomplishing that end. He still thinks so. But instead of withdrawing completely from any contact with the school he proposes to remedy what he considers a deficiency. He may also feel a slight twinge of remorse at having caused the school so much trouble.

The method Mr. Walgreen chose for finding a solution of a problem that worries him is highly commendable. Instead of continuing his attack and trying to destroy or at least damage all that Chicago university means and stands for, he has adopted the constructive device of attempting to correct a deficiency which he finds in the institution.

—Editorial appearing in Nebraska State Journal, June 1937.

THE EDITOR'S PAGE

Since the American Association of Colleges of Pharmacy has held membership in the American Council on Education, The Editor, through the courtesy of his colleagues, has been a delegate to the Council. The records will show, and certainly the general understanding was that this connection was being made with the hope that the American Council would make a study or survey of pharmacy which would supplement and be more comprehensive than the Commonwealth Study. When the funds failed to materialize there was general disappointment and there was an undertow which questioned the wisdom of continuing membership in the Council. Dr. Charles R. Mann brought us to our senses at the Washington meeting in 1935, when, as our guest speaker, he urged us to go ahead and do something for ourselves and reminded us that there were a lot of things that could be done without money if we would put our minds to the task.

Through nine years of contact with the Council I have learned that the Council was not particularly interested in what it could do for pharmacy, but rather what pharmacy could contribute to the work of the Council. The sooner we get that vision the better off pharmacy will be. It is the philosophy that Edward Kremers has preached so long, when he has told us that pharmacy has got to quit being a parasite upon the other sciences and begin to produce for itself. And what he has said of pharmacy as a science is just as true of pharmacy in its relation to education. This is all the more necessary since the American Council on Education has gone into the field of professional education and has named a committee on professional education with Dr. Raymond Walters, President of the University of Cincinnati as Chairman. This committee met in Washington on May sixth and conducted a forum which was attended by representatives of medicine, law, pharmacy, dentistry, and engineering. The immediate problem which came out of that discussion might be stated in the question—"Have the professions any problems in common in education which could be solved to better advantage if a cooperative effort was made by all the professional groups rather than to attack those problems by each group individually?" In the offing we think we see some things to do.

It was because of this recent trend in professional education that the Editor requested the American Council on Education for permission to publish in this issue of the Journal an article on Trends in Professional Education by Alphonse N. Schwitalla, Dean of the School of Medicine of St. Louis University and President of the North Central Association of Colleges and Secondary Schools. This article, brimming over with ideas, was read at the 1936 meeting of the American Council on Education and it has formed the basis of all discussions concerning trends in professional education. It therefore should be read by every student of pharmaceutical education who wishes to follow future developments intelligently. Following the article is a brief report of the forum referred to above, held in Washington in May.

Well do I remember when in 1908 I attended my first meeting of the American Association of Colleges of Pharmacy (then the American Conference of Pharmaceutical Faculties), at Hot Springs, Arkansas. Seated near me was Dr. Edwin DeBarr of the School of Pharmacy of the University of Oklahoma. Some brave soul had read a paper in which he dared to remark that it would be an excellent idea to include an elementary course in bacteriology in the pharmaceutical curriculum. Dr. DeBarr threw up his hands and said that was nothing more nor less than waving the red flag deliberately in the face of the medical profession and courting unnecessary trouble from the other side of the fence. I give this incident because it shows how far we have come since 1908. Where is the pharmaceutical educator today who is so dumb that he cannot recognize bacteriology as a major basic pharmaceutical science. Personally I am of the opinion that no druggist can operate a sanitary drugstore, nor can he appreciate the importance of the vast army of drugs, both chemical and biological which he has in his store for the control of disease, unless he has had laboratory training in bacteriology. The Editor has yet to read an article that is more convincing as to the value of bacteriology to the student and practitioner of pharmacy than the one from the pen of Dr. George Reddish published in the current issue.

If one basic field in pharmaceutical education can be said to have been neglected more than another, that field is the biological field. In this field pharmaceutical education has not kept pace with pharmaceutical practice and for that reason

biologic assay went to the medically trained man and not to the pharmaceutically trained individual, where it, by the nature of things, belongs. The Commonwealth Study of pharmacy showed physiology to be a basic pharmaceutical science and it took the strong hand of the Director of that study to keep certain members of the advisory committee from eliminating physiology from the pharmaceutical curriculum. The same sentiment was evident in the committee that made the last revision of the Pharmaceutical Syllabus. With the inclusion in the Pharmacopoeia of a number of biologic assays and with the whole field of medicine headed in that direction, for the Syllabus Committee to vote against making biologic assay a requirement in the curriculum, was nothing less than a tragedy, it was a pathetic calamity. It was all the more pathetic, not because the Committee did not see the vision, it was done for the fear it would add to the expense of teaching in some schools which could not afford it. When a school reaches that point, it better give up trying to give courses in the pharmaceutical sciences and devotes its energies to the teaching of elementary bookkeeping and penmanship. It is therefore tremendously refreshing to find a man like Dr. R. A. Deno of the School of Pharmacy of the Medical College of Virginia who is giving thought to the most basic of the basic biological sciences and is actually working out his thought in his own laboratory. This is why a paper by him appears in this number and the Editor sees enough constructive thought in it so that he feels justified in suggesting that he believes pharmaceutical education would be the richer if we were to establish in our organization, a Conference of Teachers of the Basic Biological Sciences.

Last month, at the forum held on professional education in Washington under the direction of the American Council on Education and previously referred to, the writer was asked by Dr. H. H. Horner of the New York Department of Education why we insist on the pharmacy student having so much mother tongue in his course in pharmacy. The reply was that the first essential in an educated man was to speak well his mother tongue and express his thoughts clearly and succinctly. It might also be added that in a sense the ability to speak well and write well is the professional man's greatest commercial asset for it is the one thing above all things that inspires respect and confidence in one's patron and patient. The

tragedy of the situation is, and we all admit it, that a year of English does not do what it is supposed to do or what we would like to have it do. A number of teachers of English in schools of pharmacy have expressed a desire to have a conference of teachers of English in the Association. The Editor asked Mrs. Adelaide E. Harris of the School of Pharmacy of Western Reserve to discuss this subject. Her paper is brimming full of ideas and the Editor is amazed as to the possibilities it opens up for a combined effort on the part of every teacher in the school to rectify this deplorable English situation in our schools. I find teachers of English in our state universities also are becoming alive to and interested in this English problem for pharmacy students. In my own institution, during the year just past, every member of the pharmacy faculty was bombarded by a stream of pharmacy students having been sent by the department of English for pharmaceutical material for themes in the English department. The Editor desires to make a second suggestion and that it to the effect that he believes pharmaceutical education could be greatly enriched by the establishment of a Conference of Teachers of English in our regular program.

The Editor is reminded by his publisher that the Editor's Page is a page and unless it is made so, it is a misnomer. If there were no limitations he would discuss every article in this number. As it is, he wishes his readers to note especially the article by Dr. Katherine Graham who discusses women in industry. With the help of Doctors Wakeman and Graham, the Editor is willing to rest his case in defense of women in pharmacy and awaits with eagerness and anxiety the report of the Committee on the Menace of Women to Pharmacy. (He believes there are some democrats on the committee.) The article by Mr. Walter F. Meads on the Iowa Interprofessional Associations is rich with food for thought for every pharmaceutical educator. Dr. Ward's editorial on our relationship to the work of the American Association for the Advancement of Science points the way and much is going to be said in the future pages of the Journal about the University Control of Professional Education as outlined in Dean Lipman's editorial. That is a live subject that every institution and organization dealing with professional education is now facing.

The Editor cannot close without calling attention to the

fact that in this issue there occurs an all too brief but dignified statement by one of his colleagues, of the life work and accomplishments of Frederick John Wulling. This is not an obituary. Dean Wulling still lives and I like to think of the satisfaction it must give him to see printed in permanent form the things that his colleagues admire him for. Through the twenty-eight years that I have known him and worked with him, I have thought of him, not as the Moses, but as the balance wheel of American Pharmacy. When one thinks of culture and refinement, dignity and solidarity in their relationship to pharmacy the mind unconsciously wanders toward Minnesota and comes to rest in the home of Frederick J. Wulling and before the College of Pharmacy of that great University which was the creation of his mind and the result of his toil. In twenty-eight years of political turmoil which is the part of the growth of any professional organization, no one ever asked how Frederick J. Wulling would vote because every one knew before the vote was cast where Wulling stood. And he always stood for what was right. To know Wulling and to know of the institution he builded is an inspiration. His work was the work of a pioneer. He has never known anything but the hardships of pioneering in pharmaceutical building. Every individual engaged in any phase of legitimate pharmaceutical endeavor occupies a better and more dignified position because Frederick J. Wulling builded the College of Pharmacy of the University of Minnesota. Those who follow after him there have a tradition to maintain, and those of us who labor in other pastures have a standard of idealism and accomplishment to measure up to. May your days with us, Dean Wulling, be long and happy ones, full of satisfaction because of your accomplishments and rich in friendships because of your labor for your fellowmen and the interests you represent. This is our prayer for you.

Gleanings from the Editor's Mail

(Comments on Dean Ernest Little's Editorial appearing in Vol. 1, No. 2, of this Journal concerning the use of the Headquarters Building in Washington by the American Association of Colleges of Pharmacy.)

I have read with a great deal of interest Dr. Ernest Little's editorial in Volume 1, No. 2 of the American Journal of Pharmaceutical Education under the caption "Some of Pharmacy's Current Problems". I quite agree with Dean Little in his argument that certain things would be handled better if the American Association of Colleges of Pharmacy had a full-time secretary located in the American Institute of Pharmacy. On the other hand, I am very sure that the American Association of Colleges of Pharmacy does not have sufficient funds to employ a full-time secretary, much less to employ that secretary located in a city as expensive from the living standpoint as is Washington, D. C.

During the years I was Chairman of the Executive Committee of the American Association of Colleges of Pharmacy, 1923 to 1936, Purdue University furnished stenographic services for the work of the Association to the extent of hundreds of dollars a year and no charge was made for this. The University felt that this was a contribution that it should make to pharmaceutical education. I am very sure that the same thing is happening in the case of the University of Iowa as far as stenographic service for Professor Zada M. Cooper is concerned, and it is also true in the case of the President of the Association. Each educational institution can make this contribution because they employ full-time secretaries and stenographers. If we were to employ a full-time secretary and locate him in the Headquarters Building at Washington, all of this service would have to be paid for.

I have listened with acute interest to the reports on finances made every year by Secretary-Treasurer Professor Cooper and you will remember that in every case we were living just within our income or we were compelled to dip into our reserves to carry on the business of the Association. I happen to know that our fee of fifty dollars a year for membership in the Association is all that many colleges feel they can afford to give and that there would be a decided objection if we attempted to raise these fees to the point where we could afford to employ a full-time secretary located in the American Institute of Pharmacy.

Dr. Little's argument regarding the value of such an arrangement to American Pharmacy is, I think, a bit overstated. I do not know of any other professional organization similar to pharmacy that has a full-time secretary located in Washington. Of course, this is a negative argument and really should have no consideration provided we had sufficient funds to do the work that Dean Little outlines. I think that much of the success of the American Association of Colleges of Pharmacy has been due to the fact that we have a serious group of educators who are willing to sacrifice their time and their energies for the benefit of pharmaceutical education. It is possible that there will be a

lack of interest on the part of those who have been so active if all this work were turned over to an executive secretary and, although we might gain some things, I think we would also lose a great many things if the job were turned over to one individual, regardless of who that individual may be.

In fairness to Dean Little, I wish to say that he has presented an excellent case and I hope that it will be given serious consideration by everyone connected with the American Association of Colleges of Pharmacy.

C. B. JORDAN,
Purdue University.

However desirable it might seem for the American Association of Colleges of Pharmacy to establish an office with a paid secretary at the National Headquarters Building at Washington, D. C., there are some financial problems that should be carefully considered.

We must remember that there are at the present time fifty-five colleges belonging to the Association, paying \$50.00 dues. This means an annual income of \$2,750.00 if all dues are paid. The Association has been in existence thirty-seven years and has less than \$1,500.00 accumulated funds and at the present time is just about breaking even from year to year.

There certainly would be some expense towards the up-keep of the building and anyone as secretary who would accept such a position for less than \$3,500 to \$5,000, would not be desirable for the place.

This then simply means that the dues of the member colleges would of necessity be raised from \$50.00 to \$150.00 or \$200.00 per year. This then gives us something to think about for some colleges might have difficulty to convince educational boards or regents that the proposition was worth while.

Eventually, no doubt, the American Association of Colleges should have offices in the National Headquarters Building, but it seems to me that no step should be taken unless it can be properly and adequately financed for a "weak sister" as secretary in a place of this kind would very likely do the Association more harm than good.

It might be a very fine gesture on the part of the American Pharmaceutical Association to help finance a permanent secretary of the American Association of Colleges of Pharmacy to atone in part, even at this late date, for the lack of interest in things educational and co-operation in the past.

WILBER J. TEETERS,
University of Iowa.

I don't know what to say about occupancy of the American Pharmaceutical Association Building by the American Association of Colleges of Pharmacy. I am inclined to believe that this should be a matter for major discussion at the New York meeting. We can all say what we want to say and get it out of our systems better there, perhaps, than anywhere else and, too, it will be a matter of record.

WORTLEY F. RUDD,
Medical College of Virginia.

Dr. Little's editorial, on some of pharmacy's current problems, presents very good arguments in favor of establishing an office of the American Association of Colleges of Pharmacy in the headquarter's building. It is difficult to understand why arguments in favor of such a move should be necessary. Surely if the ultimate objective of all the various pharmaceutical organizations is to be attained, namely the elevation of pharmacy as a profession and public health service, united and harmonious efforts on the part of all the groups making up the profession are essential. No doubt this unity of endeavor can be best accomplished if the pharmaceutical organizations have centrally located officers in order that business, having to do with their common purpose, can be expedited.

Of course as far as the American Association of Colleges of Pharmacy is concerned the question of the expense involved, which is always an important factor, must be considered. However in view of the advantages to be gained for pharmacy, it seems that it would be worth while for the association to try and work out some means of financing the move. The headquarters building was established to attain certain objectives. It should be the duty of every organization, concerned with the advancement of pharmacy, to support this institution in every possible way in order that these objectives may be realized.

CHAS. J. KELLY,
Xavier University, New Orleans.

The suggestions made by Dr. Ernest Little in the April Journal concerning the needs for closer cooperation and correlation of the activities of the various organizations of American Pharmacy is deserving of serious consideration by the faculties of the various member colleges.

Ways and means must be found to use to the fullest extent possible the facilities of the American Institute of Pharmacy in doing for American pharmacy exactly what the American Medical Association headquarters in Chicago is doing for American medicine. This might be partially accomplished by a publicity director at the Institute and supported by funds from the various pharmacy organizations.

It seems that each member school could do much to acquaint the public with the nature and responsibilities of the American pharmacist through addresses, radio talks, and college courses open to university students not registered in pharmacy subjects. Your disappointment in not receiving suggestions concerning the editorial in question is justified and the faculties of the member colleges should study this question in the light of improving the situation and should send in suggestions.

The American Journal of Pharmaceutical Education is doing an excellent thing by promoting thought and discussion of these questions.

C. E. MOLLETT,
*School of Pharmacy,
University of Montana.*

I have studied the editorial by Dr. Little and have found much of interest in it. It seems to me that only one of the requests for information mentioned should have been answered in any case through the American Association of Colleges of Pharmacy—that one pertain-

ing to the change by Schools of Pharmacy to the four-year course. It is difficult for me to see why such information should be any more readily available through the proposed office than through Dr. Kelly's office, or through the American Association of Colleges of Pharmacy officers. Any information of the sort mentioned must be collected, and usually is not collected until a specific request is made for it. I am not familiar with the existing set-up, and probably many are not. Certainly the Association should have the services of a full time individual to work either under the secretary-treasurer of the Association or with the president.

I may be wrong, but it seems to me that the American Pharmaceutical Association should take the lead in most things pertaining to pharmacy. I can see no reason for extending the scope of the work of the American Association of Colleges of Pharmacy, and I see that as one danger in Dr. Little's suggestion. We have our hands pretty well filled as it is. I do think that the work of the Association has been carried out very successfully under existing conditions and I will still continue to bet on Miss Cooper. In my four years contact with her, she knew all of the answers.

LLOYD L. BOUGHTON,
University of Kansas.

In reply to your request of June 12, I wish to say that I have read and reread Dr. Little's comments concerning the establishment of an office in the Headquarters Building in Washington. There is no question but what Dr. Little has presented some very logical arguments in favor of the Association's establishing an office in Washington, D. C. However, I am inclined to look at the matter from a practical standpoint and to inquire into one of the most important factors. What would such a program cost? Does the Association now have sufficient funds to carry out the program?

The American Association of Colleges of Pharmacy is not, to my knowledge, legally incorporated and although its membership is made up of colleges bound together by good will, I question the right of the executive committee to make assessments against the member colleges should a deficit arise in the treasury because of this new venture.

In our own state there is a definite feeling on the part of the Regents of Education that no department in our college under its jurisdiction should be bound by fees in agreement with any educational policy over which it has no jurisdiction. In fact, I have found it necessary to use considerable coercion on the board members to secure their approval of the increased fees which we contributed towards the survey which is now in progress. I am very certain that they would object to any increase in the fees and might even go so far as to rule that we would not be allowed to participate in the Association.

I personally know that President Coffman of the University of Minnesota is, in a measure, opposed to the activities of the American Association of Colleges of Pharmacy. Of course, his opinion may have been formed through other influences exerted upon him.

While the Association is an important cog in the development of American Pharmacy, I do not feel that it should be classed with the National Association of Boards of Pharmacy which has a definite

legal standing by virtue of the laws creating Boards of Pharmacy in each State.

From the evidence of the past three years, it would seem that there is very little possibility of the American Pharmaceutical Association and the National Association of Retail Druggists coming together in any common agreement as to the policies which should be developed in the American Pharmaceutical Association. I look upon the American Association of Colleges of Pharmacy as a purely quasi-judicial organization whose powers are limited only to the good will of the member colleges. This is quite evident when one considers the various dean and faculty appointments which have been made since the adoption of the organization requiring higher standards for the members of the various faculties.

While it is true that centralization of the agencies of pharmacy would undoubtedly give us a better standing with the various Government agencies in Washington, I doubt very much if this would definitely increase the powers of the member colleges who are primarily under the jurisdiction of legal state establishments.

In my opinion, Dr. Little's comments contain much of merit, but I feel that the problem should be given very thoughtful study and no definite action taken until all phases of the problem have been agreed upon.

I am submitting this information to you more as a personal opinion than an editorial comment. I have done so, largely because I felt that you were asking an expression from me as an individual.

E. R. SERLES,
*Division of Pharmacy,
South Dakota State College.*

Dean Little has made a splendid study of the situation confronting American pharmacy which I trust will produce some constructive thinking on the part of others.

I have recognized for many years the necessity for some sort of central organization which could speak authoritatively for pharmacy in America. I have given much thought to the matter and as a beginning I suggested in a joint conference of National Association of Retail Pharmacy and American Pharmaceutical Association that we have a joint publication under the direction of the American Pharmaceutical Association, and it would go to all retail drug stores in America. I suggested further that there should be some sort of joint membership and that all literature affecting pharmacy in a national way should be molded and directed by some central committee so that some uniformity of plan and object might be promulgated. There are quite a number of individuals who are thinking along this line at the present time and out of which may come some worthwhile organization which could speak with authority on matters pharmaceutical.

There is no question but that the Institute of Pharmacy should be the headquarters for all branches of pharmacy in America, but I see some tremendous difficulties which must be eradicated before the full effect of a worthwhile unification can be realized.

The Boards, unfortunately, can finance their office in Washington, but I do not quite see how the colleges can do this at the present time.

The National Association of Boards of Pharmacy and the American Association of Colleges of Pharmacy along with the American Pharmaceutical Association in one building, I see the possibilities of considerable confusion and misapprehension as to which of these groups should have the power of general direction. If these three groups fulfill their missions to the fullest capacity there must of necessity be some one who is to be recognized as the general directing head. The question naturally arises then: (1) Would the National Association of Boards of Pharmacy be subject to guidance or direction by any of the other groups. (2) Would the American Pharmaceutical Association submit to direction by either of the others. (3) Would the interest of pharmaceutical education be best served without absolute independence of thought or action. (4) Is it possible under existing conditions for the National Association of Boards of Pharmacy and the American Association of Colleges of Pharmacy to absolutely agree as to plans and policies? The personnel of these two groups is so different in character and in background that it is difficult for me to see just how we are going to develop perfect understanding between them.

Theoretically at least the American Pharmaceutical Association should be so constituted that it should direct all national pharmaceutical policies, but under existing conditions I seriously question either this as feasible or desirable, but there is much dissatisfaction on the part of many individuals with its setup.

Industry is attempting to solve its problems and apparently with some degree of success by arranging the plan for having a dictator as in the case of the moving picture industry, base ball and other groups. I am rather inclined to believe that some such plan as this one, at least the principle involved in it must eventually be evolved. Pharmacy with its various ramifications is a very loose knit organization and it seems to me that if we are going to make any progress for pharmacy in America, some direct head must control all of the integral groups which have to do with pharmacy or pharmaceutical products.

I hinted at this matter in my presidential address last year at Dallas. I introduced the thought in many of the papers I have written and the remarks which I have made. But even with the large amount of thought I have given to the matter I am not prepared at this time to make a concrete recommendation for a plan to be followed, but I believe that there are brains enough in American pharmacy to work out a proper plan.

ROBERT C. WILSON,
University of Georgia.

A LETTER FROM FRANCE

June 12, 1937
Hotel Westminster,
Nice, France.

Dear Doctor Lyman:

Before leaving America I received a letter from you stating that if I had anything to report to you which might be made use of in the next issue of the *American Journal of Pharmaceutical Education* to

send same on to you. I am not sure that I have, but at least here is something for your consideration. Please consider it as a gesture of cooperation and good faith on my part. It will be hastily scribbled and there will be no offense if you promptly relegate all of its contents to your editorial waste-basket without any undue ceremony.

I might suggest, however, that if you decide to use any portion of the enclosure, it might be best used as an informal letter rather than an editorial from me. That is, of course, but a suggestion for your consideration.

One of the things that has impressed me very deeply since being in Europe, is the apparent sincere desire and longing for continued peace on the part of most people, coupled with frantic strengthening of armaments for the next war, which all seem to think of as being inevitable. I will say, however, that judging from those to whom I have talked, there seems to be no great fear of immediate war. I am not sure how much that thought may be an expression of desire, rather than deep conviction.

I have asked a considerable number of people why in their judgment, war seems so obvious, when the desire for peace remains so strong in the hearts of men.

The replies can be classified into one of the three following subdivisions:

(1) Too great arbitrary power in the hands of one, or a few men in authority in certain countries.

(2) Lack of an adequate international organization to handle emergencies as they arise.

(3) Fear and suspicion, rather than hatred, existing between the people of the different European nations. In other words, a bad case of jitters, approaching what might be called a national nervous breakdown.

I am sure that the first explanation seems very logical and is understood and appreciated by all of us. It renews in us the sincere hope that our democratic form of government may be preserved and strengthened, rather than to yield too much power to any one man, no matter how wise and virtuous he may appear or claim to be. The risk is too great and liberty is too precious to gamble with the possibility of losing it, as has happened in some European countries.

As to the lack of adequate international organization to handle emergencies as they arise, the name of a great President Woodrow Wilson, the Peace Conference and the League of Nations are at once suggested to all of us.

Was Congress sound in its decision to stay out of the League of Nations, immediately following the World War and thus prevent entangling European alliances, or did we pass up our opportunity to promote world peace, such as can not again appear until another world catastrophe has shaken our civilization to its very foundations?

Perhaps you would like to answer that question. If so, I cheerfully step aside in your behalf.

I am personally of the opinion that the third reason as stated above, has played a most vital part in developing conditions as they now exist, lack of acquaintance and understanding must of necessity be followed by fear and suspicion, leading eventually to even hatred of a most unjustifiable nature.

At a meeting of Rotary International held at Nice, France yesterday I had the extreme thrill of hearing Mr. Maurice Duperrey of Paris, France nominated for President of Rotary International by his very dear friend Otto Fischer of Stuttgart, Germany. It was an event which brought a thrill to the six thousand world citizens who were in attendance and which brought tears to the eyes of many. In my judgment it is this spirit of international acquaintance and understanding which is needed, even more than international machinery and the abolition of willful dictators.

Without good-will and understanding in the hearts of men, no plan of procedure will operate at all adequately no matter how complete or plausible it may be. With the spirit right and acquaintance and understanding perfected by the citizens of the world, it is conceivable that there may be more than one path leading out of our present difficulties to world peace and prosperity.

Pharmacy has not been slighted on my brief sojourn abroad. Most of my time of course has been claimed by Rotary matters but I have made pharmaceutical contacts wherever possible. I would say as a result of these limited contacts that the economic condition of the retail pharmacist in England and France is somewhat better and the professional attitude far superior to that of our American pharmacist.

Yesterday I attended section No. 2 of the chemical, drugs, perfumes and soaps division of the vocational craft assemblies. The name of section No. 2 is Drugs, Drugstore and Pharmaceutical Chemicals. Mr. Herrera, a retail pharmacist of Havana, Cuba, who is also President of the Rotary Club of Havana had been appointed chairman of the section. Mr. William H. Donges, a retail pharmacist from Xenia, Ohio was appointed secretary.

There were twenty-two retail pharmacists, one manufacturer and one educator in attendance. The countries represented were as follows: United States 8, England 4, Denmark 3, France 3, Cuba 1, Algiers 1, Rumania 1, Switzerland 1, India 1. Unfortunately but a few of these men could be prevailed upon to speak. I fear your representative may have spoken too much. Nevertheless, some very interesting discussions developed.

The foreign representatives were eager to learn of our Fair Trade Laws and what benefits we hoped might accrue to pharmacy as a result of them? They also seemed much impressed by the recent development of pharmaceutical education in the States, which I outlined to them in considerable detail. I was very thankful for the presence of Mr. Kenneth B. Bowermann of San Francisco who made a fine presentation of professional pharmacy in the States and exhibited the kind of professional pride which we would like to see manifested by all our retail pharmacists.

According to the reports made the most ideal conditions in retail pharmacy seemed to exist in Denmark where the profession is very closely regulated by the state and only registered pharmacists may own a drugstore. But one store for every ten thousand population is allowed and the pharmacist in the rural districts is guaranteed a certain minimum income by the government. In some instances substantial contributions are made by the government to insure a minimum income. The employes work on an average of forty-five hours a week

and operate on fixed salaries which are now about three times as large as they were before the war.

The pharmacist does professional work only, which, however, involves the sale of some few proprietary medicines.

The physicians are not allowed to dispense and the prices of prescriptions are carefully regulated by the government.

The government is at the present time buying the drug stores as rapidly as possible and making it increasingly difficult for individuals to do so.

Conditions in India represent the other extreme with a complete absence of regulations and almost no qualifications obtaining. The representative from India told us that there were probably not more than twenty "qualified chemists" in the whole country of India. The doctors all dispense and anyone who cares to assume the responsibilities may do so.

As I stated above, modesty prompted most of the representatives to remain quiet and I have the feeling that much useful and interesting information was not made available.

However, the session was very much worthwhile and I hope may be of some interest to you.

Kindest regards,
ERNEST LITTLE.

I thank you very sincerely for the flattering request contained in your letter of May 27th (Publication of Trends in Professional Education). I appreciate the honor you have done me but even more do I appreciate the attitude towards professional education of which your letter gives such convincing evidence.

You have my full permission to use the article for re-publication in the American Journal of Pharmaceutical Education. Incidentally, I might say that after looking through the two numbers of the Journal which you were good enough to send, I am very anxious to secure for our Medical Library a subscription to your Journal and to keep our files of it complete.

With my best wishes and sincerest regards,

Very truly yours,
ALPHONSE M. SCHWITALLA, S. J.

Notes and News

During the summer the University of Washington, College of Pharmacy, will move into new quarters on the top floor of the newly constructed Pharmacy-Chemistry building. This will relieve the overcrowding of both pharmacy and chemistry.

Six large laboratories for work in the specialized fields of pharmacy, pharmaceutical chemistry, pharmacognosy and pharmacology are provided. In addition there is a large general and several smaller research laboratories for graduate work. Instruction in pharmacognosy will be facilitated by a separate drug museum and study room, and in pharmacy by a commodious model drugstore. Animals for pharmacological study are to be housed in a modern domicile equipped with quartz glass skylights so they will receive the benefit of unfiltered sunlight. Dean Johnson's office and the state laboratory are on the first floor. The separation of this unit of the college was designed to make the state laboratory more accessible to those who make use of it.

Professor Emil Koefoed died at Copenhagen, Denmark, in his seventy-ninth year in May. When he retired as director of the Danish Institute of Pharmacy in 1930, Dr. Koefoed could look back upon a third of a century of distinguished service in this position during which he placed pharmacy upon the highest plane of discipline and order. In addition he was president of the society for aiding pharmacists, in which he had maintained a special interest. He was succeeded by the present director, Professor Carl Faurholt.

Howard B. Nelson, a 1936 graduate of the College of Pharmacy of the University of Idaho has been appointed pharmacist in the Medical Administrative Corps of the Army. Lieutenant Nelson has been assigned to the Fitzsimmons Hospital in Denver.

Frederick A. Fuhrman, who was graduated from Oregon State College, School of Pharmacy on June 1, 1937, will sail from New York on July 10 for a year's study in Germany. Mr. Fuhrman has been selected as an exchange student for the school year 1937-1938 in return for Karl-Heinz Oedekoven, a student of Bonn, who is now attending Oregon State College.

Professor L. D. Hiner of the Department of Pharmacology and Pharmacognosy of the South Dakota State College is in residence at the University of Florida completing his work for the doctorate.

Robert Anderson of Macon, Georgia who was graduated from the School of Pharmacy of the University of Georgia at the June commencement was honored during his senior year in being chosen by the student body as the most outstanding student of the University of Georgia.

The University of Washington College of Pharmacy has seven fellowships available each year for graduate students. The positions require approximately half time instructional load consisting principally of laboratory supervision and carry salaries of \$50 to \$70 per month, depending on the length of service of the fellow.

The Sixth Annual Pharmaceutical Conference, sponsored by the College of Pharmacy of the University of Michigan, and of the May meeting of the Detroit Branch of the American Pharmaceutical Association, was held Tuesday, May 18, 1937. The Conference was devoted to topics relating to the public health and the relationship of pharmacy to this phase of work. The afternoon session included addresses by Dean Edward Spease, of the College of Pharmacy of Western Reserve University; Dr. Erwin W. Nelson, Professor of Pharmacology of the University of Michigan; and Dr. C. C. Young, Director of Laboratories, Michigan Department of Health. The evening program included an address by Dr. Fred Hodges, Professor of Roentgenology of the University of Michigan.

Dean Wilber J. Teeters of the College of Pharmacy of the University of Iowa retired from active service on July 1st. The appointment of Professor R. A. Kuever to succeed Dean Teeters has been announced.

Dean W. F. Sudro of the Division of Pharmacy of the North Dakota State College has resigned the secretaryship of the North Dakota Pharmaceutical Association, a position he has held for many years.

Dean C. Leonard O'Connell of the University of Pittsburg gave the commencement address at the Connecticut College of Pharmacy on June 5th.

Dr. Earl Guth, who received the doctorate in pharmacy at the University of Washington in June, will teach in Duquesne next year.

Dr. Harald G. O. Holck, Associate Professor of Pharmacology in the College of Pharmacy of the University of Nebraska sailed for Demark and Sweden on June 11th. Part of the summer will be spent at the Pharmacological Institute of Lund, Sweden, where Doctor Holck will be the guest of Professor G. Ahlgren. Dr. Holck also has been invited to address the 5th Nordic Physiological Congress at Upsala, August 27-28. He will speak about his researches upon sex-differences in rats in tolerance to certain barbiturates. He will demonstrate this unique much higher male rat resistance to pernoston, one of these barbiturates. Mrs. Holck and their two boys accompanied him and will spend most of the time visiting with relatives in Denmark.

The College of Pharmacy of the Detroit Institute of Technology will open the coming year with greatly increased laboratory space and equipment. New laboratories will be available for bacteriology, prescription work and research. A drug plant garden and suitable quarters for experimental animals are being provided.

The April meeting of the North Jersey Branch of the American Pharmaceutical Association was held at Rutgers University College of Pharmacy. There was a large attendance, more than half of which were physicians. Since the inception of the pharmacists'-physicians' meeting several years ago, its popularity has grown steadily, especially with the physicians who show great interest in the displays and methods of manufacturing in the laboratory.

On May 20th Mr. H. C. Christensen of Chicago was the chief speaker at the annual banquet of the Mortar and Pestle Club of the

College of Pharmacy of the University of Colorado. Mr. Christensen discussed the effort that had been made in Congress and in the states in the last twenty years to secure better laws for the regulation of the practice of pharmacy. He pointed out that this had been a period of great progress and said that the student who has the foresight to take a specialized course four years in length in a college of pharmacy is facing a bright future and a better career of service.

At the annual meeting of the Kansas Pharmaceutical Association at Wichita in April a program was sponsored by the faculty of the School of Pharmacy of the University of Kansas. Dean Havenhill and Professors Boughton and Spencer were the speakers.

Dr. Frederick J. Wulling, Dean Emeritus of the College of Pharmacy of the University of Minnesota has been elected an emeritus annual member of the American Association for the Advancement of Science under the Luella A. Owen Fund.

As a part of the Centennial of the University of Michigan a symposium was held on "What Constitutes an Adequate Health Service for a Community?" Pharmacy was represented in this symposium by Dr. Howard B. Lewis, Director of the College of Pharmacy of the University of Michigan.

In May, the School of Pharmacy of the University of Pittsburg sponsored a pharmaceutical conference, the purpose of which was to establish a professional and educational contact between the School and the pharmacists of western Pennsylvania. Outstanding features of the program were a lecture by Dr. J. W. Mitchell, on the Pharmacist's Role in Diabetes, a discussion by Dr. George Beal of the legislative program of the American Pharmaceutical Association and a prescription clinic by Dr. Leon Lascoff.

As a part of the Richmond Bicentennial Celebration, the Medical College of Virginia has erected a series of exhibits which are open to the public. One of these is an old time drugstore assembled by the School of Pharmacy. Dr. R. A. Deno, a member of the pharmacy faculty, is in charge of this display and with the help of other faculty members and druggists throughout the state, he has succeeded in erecting one of the finest old apothecary shops in the country. The store is modeled after that of James H. Roy which was established about 1837 in Fredericksburg, Virginia. All details have been carefully worked out and part of the counter and other equipment are originals obtained from Fredericksburg. All the bottles used are blown and are known to be at least 100 years old. The shelves have been stocked in accordance with an old (1847) inventory which was found among the store's fixtures. An interesting group of items on this inventory is a complete list of paint pigments sold in those days. These pigments have been placed in bottles and produce a colorful display as part of the stock. The store has caused a great deal of favorable comment, and it is planned to keep it as a permanent part of the School of Pharmacy.

At the 93rd Commencement of the University of Michigan, held June 19, 1937, the honorary degree of Master of Science was conferred upon Professor E. Fullerton Cook, of the Philadelphia College of Pharmacy and Science.

Miscellaneous Items of Interest

Program of the Thirty-Eighth Annual Meeting of the American Association of Colleges of Pharmacy

Officers

President, William G. Crockett; Secretary-Treasurer, Zada M. Cooper; Chairman of the Executive Committee, Ernest Little.

Monday, August 16

9:00 A.M. Meeting of the Executive Committee.

9:30 A.M. Meeting of Teachers' Conferences.

Conference of Teachers of Pharmacy

Officers

Chairman, Charles O. Lee; Vice-Chairman, Elmer L. Hammond; Secretary, L. Wait Rising.

Program

Monday, August 16

1. The Pharmacist is More than the Doctor's Cook.—Howard Stephenson, Editor American Druggist.
2. Teaching of Prescriptions.—F. A. Gilfillan, Oregon State.
3. The Use of the Model Drug Store As An Academic Tool.—Neal Bowman and John Lynch. Temple University.
4. Techniques in Library Research.—Carter Alexander. Columbia University.

Conference of Teachers of Chemistry

Officers

Chairman, Lewis C. Britt; Secretary, Justin L. Powers.

Program

Monday, August 16

1. The Application of Objective Examinations in Elementary Organic Chemistry.—Carl J. Klemme, Purdue University.
2. Are Delayed-Course Examinations Adaptable to Pharmaceutical Education.—Charles H. Rogers, University of Minnesota.
3. Types of Examinations and Methods of Examining.—James D. Russell, Detroit Institute of Technology.
4. Methods of Examining in Chemistry Pertaining to Pharmacy.—Edwin L. Altman, Rhode Island College of Pharmacy.
5. Pharmaceutical Chemistry as Presented at the St. Louis College of Pharmacy.—Thomas D. James, St. Louis College of Pharmacy.

Conference of Teachers of Pharmacognosy and Pharmacology

Officers

Chairman, Ralph D. Bienfang; Secretary, Forest J. Goodrich.

Program

Monday, August 16

1. Laboratory Work in Pharmacology for the Pharmacy Student.—Richard Bliss.
2. The Instruction of Advanced Students in Covering Scientific Literature.—James Madison Dille.
3. Experimental Pharmacology as a Teaching Tool.—Arno Viehoever.
4. Predictive and Objective Examinations in Pharmacognosy and Pharmacology.—B. V. Christensen.
5. Relationship of Botany and Pharmacognosy to Other Courses in Pharmacy.—Wm. J. Bonsteel.
6. The Scope of Pharmacognosy Courses with Relation to their Credit Value.—C. C. Albers.
7. The Correlation of Working and Study Hours with Grades in Pharmacognosy.—L. K. Darbaker.
8. Some Problems Arising in Teaching the Microscopy of the Powdered Endocrines.—Marin S. Dunn.
9. The Pharmacognosy Institute at Zagreb University.—Ralph Bienfang.
10. Biographical Notes on Teachers of Pharmacognosy.—Autun Urgoc—Richard Wasicky—Carlos Stellfeld.

Conference of Teachers of Pharmaceutical Economics

Officers

Chairman, W. Henry Rivard; Secretary, Ralph W. Clark

Program

Monday, August 16

1. Average Annual Earnings of Drug Store Employees Contrasting with Other Retail Employees.—Frank A. Delgado.
 2. An Exploration in Economics.—After College What?—W. Henry Rivard.
 3. Nimble Dollar Fallacies.—H. S. Noel.
 4. Light and Architecture in Store Planning.—A. L. Powell.
 5. What is Expected of a Drug Store Employee.—Ralph W. Clark.
- Others to be announced at the meeting.

Sessions of the Association

First Session, Monday, August 16, 1:30 P. M.

Roll Call

Appointment of Committee on Resolutions

Address of the President, William G. Crockett

Report of the Secretary-Treasurer, Zada M. Cooper

Report of the Executive Committee, Ernest Little

Appointment of Nominating Committee

Appointment of Auditing Committee

Reports of Standing Committees:

Committee on Educational and Membership Standards, A. G. DuMez

Committee on Curriculum and Teaching Methods, Henry M. Burlage

Committee on Activities of Students and Alumni, Adolph Ziefle

Delegates to the American Council on Education, Rufus A. Lyman

Committee on Relation of Boards and Colleges, Hugh C. Muldoon.

Paper.—Entrance Requirements, Charles B. Jordan.

Monday, August 16

Annual Dinner, 6:00 P. M.

Address by Dean George Braxton Pegram

Second Session, Monday, August 16, 8:00 P. M.

Reports of Standing Committees (continued)

Committee on Libraries, Charles O. Lee

Committee on Problems and Plans, Rufus A. Lyman

Committee on Status of Pharmacists in the Government Service,
A. G. DuMez.

Report of the Editor of the American Journal of Pharmaceutical
Education, Rufus A. Lyman.

Reports of Special Committees:

Committee on Food and Drug Legislation, Charles B. Jordan.

Committee on Pharmacy Predictive and Achievement Tests, Carl J.
Klemme.

Joint Session of the American Pharmaceutical Association, the Na-
tional Association of Boards of Pharmacy and the American
Association of Colleges of Pharmacy.

Tuesday, August 17, 9:00 A. M.

Report of the Fairchild Scholarship Committee, E. G. Eberle

Report of the Committee on Pharmaceutical Syllabus, J. G. Beard

Report of the Council on Pharmaceutical Education, A. G. DuMez

Report of the American Pharmaceutical Association Committee on De-
velopment of Pharmacy Laws, R. L. Swain

Report on Proposed Popular Publication, E. F. Kelly

Report of Committee on Degrees, C. B. Jordan

Paper, Recruiting for the Profession of Pharmacy, B. V. Christensen.

Third Session, Tuesday, August 17, 1:30 P. M.

Reports of Special Committees (continued):

Committee on Professional Relations, George C. Schicks

Committee on Status of Women in Pharmacy, C. Leonard O'Connell

Committee on Time When Experience Can Be Secured to the Best
Advantage, Charles B. Jordan.

Reports of Special Representatives:

Representatives on the American Council on Pharmaceutical Educa-
tion, A. G. DuMez

Report on Biological Abstracts, Heber W. Youngken

Representatives to the National Drug Trade Conference, A. G. DuMez

Representatives to the National Conference on Pharmaceutical Re-
search, Franklin J. Bacon

Representatives to the Druggists Research Bureau, Paul C. Olsen

Representative to the National Association of Retail Druggists, C.
Leonard O'Connell

Report of the Historian, Edward Kremers

Unfinished Business

Miscellaneous

Election of Officers

New Business

Executive Session.

Since the work of the Section on Legislation and Education of the American Pharmaceutical Association is of special interest to our readers, the program for the 1937 meeting is given here.

1. Educating the Physician and the Pharmacist Regarding Official Type of Preparations Versus the Proprietary Type.
Frank A. Delgado.
 2. Physicians, Patients, and Prescriptions.
Chester I. Ulmer.
 3. Number of Graduates and Registered Pharmacists Necessary to Maintain the Professional Personnel at the Proper Level.
E. F. Kelly.
 4. Recent Developments in the American Council on Education.
Rufus A. Lyman.
 5. Are the Colleges of Pharmacy Fulfilling Their Duties When They Merely Prepare Graduates in Basic Sciences?
E. J. Parr.
 6. Should the Certificate of Qualified Assistant be Given by Pharmacy Boards after 1937?
Ernest Little.
 7. The Value of Technician Training to the Pharmacist and Legislation Protecting the Same.
D. B. R. Johnson.
 8. Working Conditions in Retail Pharmacy.
Wortley F. Rudd.
 9. Meaning ———?
Wilbur L. Scoville.
 10. Phases of the Uniform State Narcotic Acts.
Robert L. Swain.
 11. Medical Economics and Pharmacy.
Roland T. Lakey.
- Other papers are promised.

FREDERICK JOHN WULLING

Frederick John Wulling, Dean Emeritus of the College of Pharmacy of the University of Minnesota, was born in Brooklyn, New York, on December 24th, 1866. In 1870 the family moved to Carlstad, New Jersey, where he obtained his primary education under house tutors followed by his high school education in New York City. In 1884 he began to read medicine under the direction of Dr. Julius Richter of Carlstad and at the same time make numerous translations of foreign scientific journals. Believing a greater field for affirmative work existed in pharmacy than in medicine he entered the New York College of Pharmacy in 1885. During the final year of his undergraduate course he acted as assistant lecturer in the College of Pharmacy and attended lectures in the Physicians and Surgeons College of Columbia University.

In 1887 he graduated from the Pharmacy College at the head of his class; a distinction which brought to him many special honors and rewards for high scholarship. After graduation he was offered a position as instructor in pharmacy. His acceptance of the position was probably the deciding factor in his choice of pharmaceutical education as a life work. At the same time he became affiliated with the *Pharmaceutical Review* as associate editor.

During the summers of 1887 and 1889 he made trips to Europe to study the educational and research methods of the more important

educational institutions of the continent. In 1890 he was advanced to assistant professor of pharmacy. In 1891 he accepted a professorship in inorganic pharmaco-dynamics in the Brooklyn College of Pharmacy.

In 1892 he accepted a call to the University of Minnesota as Dean and Professor of Pharmacology, to organize and direct the newly created College of Pharmacy. The path of his work was beset with obstacles. Many of the pharmacists were unsympathetic with the idea of higher education. However his quiet, sincere manner, coupled with a persistence of purpose, broke down these barriers in time so that he now counts his friends in the northwest by the thousands and the modern, well-equipped building stands as a splendid monument to his work.

In 1897 he married Miss Lucile Gissel of Brooklyn and a son, Emerson G., was born to them in 1903.

In 1936 he retired from active duty at the University of Minnesota after forty-four years of service; years full of affirmative activity and progressive accomplishment. In addition to scores of papers and essays contributed to scientific journals he has published larger volumes among which may be mentioned "Evolution of Botany", "Medical and Pharmaceutical Chemistry" and "Experiments for Beginners". Continuation of his studies in pharmacy earned him the degree of Phm.D. and subsequent studies in law, the degrees of LL.B. and LL.M., the latter resulting in his publication of the text "A Course in Law for Pharmacists".

His interest in civic affairs is attested by his membership in the Minneapolis Civic and Commerce Association in which he devoted considerable effort to the promotion of "safety". As a member of the Church of the Redeemer he has served well and faithfully in furthering the religious work of that organization.

He has always supported such organizations as the Minneapolis Symphony Orchestra, the University Artists Course, etc. His appreciation of art has resulted in the acquisition of an outstanding collection of paintings, etchings and rare antiques. He is a life-member of the Minneapolis Institute of Fine Arts of which his son is assistant director. His memberships in associations and societies are too numerous to mention here but the most important are the American Association for the Advancement of Science, the American Chemical Society (1893), and the American Pharmaceutical Association (1893) of which he was president in 1916-17.

The degree of "Magister Pharmacie honoris" was conferred upon him in 1917 by the Philadelphia College of Pharmacy and the degree of "Doctoris in Scientia Pharmaceutica" by Columbia University in 1929.

During his residence at Minnesota Dean Wulling has made four trips to Europe, one of which was for the study of European medicinal plant gardens prior to the establishments of a similar garden at the University of Minnesota.

During the year preceding and since his retirement, he has been tendered many luncheons and banquets by those who wish to show their appreciation for his services to pharmacy. Probably the most

largely attended and pretentious was that given on April 7th of this year at the Minnesota State Pharmaceutical Convention at the Hotel St. Paul. Over eight hundred pharmacists, including many notables, gathered to listen to and contribute eulogies upon his work and to present to him a large bronze plaque featuring his figure in bas-relief.

Late in 1935 Dean Wulling suffered a nervous breakdown from which he is slowly recovering. His years of intensive activity make it difficult for him to be as quiescent as necessary for rapid recovery. A few years ago the Wullings transferred their summer residence from Alexandria to Christmas Lake, an ideal location within an hour's drive of Minneapolis. Here, located on a heavily wooded ridge between two lakes, they have developed a modern summer home. A considerable portion of the grounds was allowed to remain in the original primitive condition and in this area one finds nearly all of the wild flowers, plants and shrubs native to the locality. The cleared area in which the house stands is a beautiful landscaped lawn containing gardens with many flowering plants and shrubs.

In these ideal surroundings Dr. Wulling is slowly, but with acceleration as his health improves, applying himself to the many pursuits which, because of lack of time, had been deferred from his active years at the University. It is needless to say that the gardens and lawn receive a considerable share of his time. He is assembling his bibliography of hundreds of titles which the alumni plan to publish in book form. At the request of President Coffman he is assembling material for "Memoirs of My Forty-four Years at the University of Minnesota." Other plans call for a "History of the College of Pharmacy of the University of Minnesota". And then there are many separate chapters in the history of the College of Pharmacy upon which he is planning to build articles.

Dean Emeritus Wulling misses his old associations,—the contacts with students, alumni and friends. But amid the beautiful surroundings of his lake home he is slowly building up strength which will again allow him an active part in pharmaceutical affairs in the northwest.

CHARLES V. NETZ,
The University of Minnesota.

The Kappa Epsilon Convention

The 16th anniversary of the founding of Kappa Epsilon, professional pharmaceutical sorority, was observed at the biennial convention of the organization which was held at the Park Hotel, at Madison, Wisconsin in May.

The grand chapter of Kappa Epsilon was established at Iowa City on May 13, 1921, as a result of the recommendation of a committee of the American Conference of Pharmaceutical Faculties appointed for the purpose of investigating the need of an organization with high professional and scholastic standards to further the interests of women students in colleges of pharmacy. The purpose of this organization, as stated in its constitution is to unite women students in pharmacy;

to cooperate with college authorities in stimulating a desire for high scholastic standards; to foster a professional consciousness; and to provide a bond of lasting loyalty, interest and fellowship. That Kappa Epsilon is endeavoring to fulfill this purpose was evidenced no less by the type of women pharmacists who attended than by the character of its activities.

As one means of stimulating a desire for good scholarship the grand chapter of Kappa Epsilon offers each year two prizes—one a trophy awarded to the chapter maintaining the highest scholastic average, the other an individual award to the girl having the best record. Inasmuch as the organization meets but once in two years, awards for the college years 1935-36 and 1936-37 were made at this time. Zeta Chapter, at Wisconsin, won the 1935-36 award and Delta Chapter, at Montana, that for 1936-37. The individual prizes went to Elaine Gustine of Zeta and Ann Marie Picchioni of Delta.

A feature of one afternoon session was an address by Dr. Edward Kremers who chose to talk upon "hobbies", pointing out that much of the happiness, and therefore the success, of professional men and women depends upon a wise choice of their play, their hobbies. In the course of his remarks Dr. Kremers outlined a number of activities, all related in some way with pharmacy, which if adopted as hobbies, should prove of interest and value to women in the profession.

At the Founder's Day Banquet Prof. Nellie Wakeman of Wisconsin presided and Prof. Zada M. Cooper of Iowa was the principal speaker.

Of those in attendance at the convention, about half were delegates from the active chapters located at various colleges of pharmacy while the remainder were graduates of these colleges who are actively practicing the profession. Among the retail pharmacists present were a number who own, and successfully operate, drug stores. These were Miss Clarice Abrams, who has a prescription pharmacy at Calumet, Michigan; Miss Edith Schmitz, who has a drug store at Platteville, Wisconsin and is also President of the Wisconsin State Board of Pharmacy; Miss Naomi Kenefick, who operates her own store at Eagle Grove, Iowa; and Mrs. Hilda Johnson Hinrich, who with her husband owns and operates a store at Superior, Wisconsin. Mrs. Hinrich is also active in state association work. Miss Muriel Stoner, of Great Falls, Montana; Miss Louise Schmitz, of Minneapolis, Minnesota; and Miss Gertrude Horch, of Cleveland, Ohio, are in charge of hospital pharmacies.

Officers of the grand chapter of Kappa Epsilon are:

President, Louise Kruckenberg Hunkins, Minneapolis, Minn.

First Vice President, Muriel Stoner, Great Falls, Mont.

Second Vice President, Gertrude Horch, Cleveland, Ohio.

Secretary, Minnie Meyer, Madison, Wis.

Treasurer, Elida Larson, Iowa City, Iowa.

Historian, Harriett Hallenberg, Fargo, No. Dak.

Naomi Kenefick of Eagle Grove, Iowa, and Mary Langevin Anderson, Detroit, Michigan, are members of the advisory council.

Zada M. Cooper.

Notes on the Work of the American Council on Pharmaceutical Education

By A. G. DuMez, Secretary

Since the meeting held in Dallas, Texas, on August 23, 1937, two new appointments have been made to the Council: Dr. R. L. Swain was appointed to succeed Russell B. Rothrock as a representative for the National Association of Boards of Pharmacy and Dean C. B. Jordan of Purdue University was appointed to succeed Dean Theodore J. Bradley of the Massachusetts College of Pharmacy as a representative of the American Association of Colleges of Pharmacy.

The last meeting of the Council was held at the American Institute of Pharmacy in Washington, D. C. on December 6, 1936. At this meeting, the proposed draft of standards for the accreditation of colleges of pharmacy was reviewed in the light of the comments offered in the symposium held during the meeting in Dallas and some changes were made. A revised draft of the standards, incorporating these changes, was prepared and copies were mailed to the deans of the colleges of pharmacy and to the secretaries of the state boards of pharmacy on April 5, 1937.

At the meeting held in Washington, it was agreed that the standards should be tested by making a number of trial inspections, the selection of the colleges to be inspected to be made on the basis of representation of the different types now in existence. The Chairman of the Council was authorized to appoint the committee to make these inspections and the Secretary was directed to draw up the forms required to secure the preliminary information and data needed to assist the committee in making the inspections.

Pursuant to the foregoing action of the Council, Chairman E. F. Kelly appointed the following members to serve on the inspection committee: Mr. H. C. Christensen and Dr. R. L. Swain for the National Association of Boards of Pharmacy, Dean C. B. Jordan and Dean A. G. DuMez for the American Association of Colleges of Pharmacy, Dr. H. A. B. Dunning and Dr. E. F. Kelly for the American Pharmaceutical Association, Dr. David A. Robertson for the American Council on Education. Seven colleges of pharmacy, representative of the different types now operating, agreed to cooperate in the trial inspection; and the committee, accompanied by Mr. George A. Moulton, President of the National Association of Boards of Pharmacy, visited these colleges during the last week in April.

A thorough examination of each of these colleges was made with regard to the physical plant, teaching facilities, finances, administrative setup, faculty, entrance requirements, scholastic requirements, etc. A fine spirit of cooperation was exhibited by all of the colleges and much valuable information was obtained by the committee. It is believed that the Council is now in position to prepare a final draft of standards to be used as the basis for the formal accreditation of colleges of pharmacy.

It is the intention of the Council to prepare the final draft of standards for adoption at the meeting to be held in New York in August and thereafter to proceed with the formal inspection of colleges for accreditation. It is expected that the formal inspection of the colleges will be completed by the middle of 1939 and that the first list of accredited colleges will be ready for publication shortly thereafter.

Report of the Committee on Libraries of the American Association of Colleges of Pharmacy

Your committee found it hard to know which of the many problems of pharmacy libraries to work upon this year.

Early in March the Chairman addressed letters to the other five members of the committee for suggestions as to the things we ought to do. Three very helpful letters were received. After further inquiry and delay the Chairman together with Professor F. S. Bukey, who is in temporary residence in Lafayette this year, decided that it was time to offer an acceptable list of abbreviations for the pharmacy journals and periodicals, American and foreign as well. This we have attempted to do.

We have gone into this aware of the numerous and perplexing problems that would be bound to arise. Such an undertaking as this naturally calls for a policy. While we cannot lay claim to a very clear policy we have tried to follow certain very general rules.

In making a list of pharmacy journals, should those upon closely related subjects, such as chemistry, be included? Our rule is that only the very obvious journals in the closely allied fields should be included, such as the *Journal of the American Chemical Society*, etc. A further rule is that all journals which are in any way pharmaceutical, whether commercial, professional or scientific, should be included. An effort has been made to include the proceedings of the American Pharmaceutical Association. No attempt, however, has been made to list the proceedings of the state associations. This may, at once, be questioned. There are also numerous annual reports, of one kind or another, that are valuable which have not been included.

Concerning the list of journals and publications which follows we have tried to suggest abbreviations, give the full titles, dates of beginning, consolidations, changes in title, city or state, and final disposition whether extant or extinct. Insofar as possible we have tried to follow the abbreviations used by Chemical Abstracts.

The committee is handing you this list for corrections of any and all kinds. When the corrections, additions and deletions are all made, then certain obvious classifications should follow.

It has been our purpose in this report to submit as complete a list as possible, alphabetically arranged, with the hopes of including every possible publication of immediate interest to pharmacy.

If it is your pleasure to have this job completed, it is hoped that the committee will be instructed to carry on with it. It will require many hours of patient labor to perfect the job.

We have made frequent use of the following references:

1. Myers, M. *The Pharmaceutical Journals of the United States* *J. Am. Pharm. Assoc.* 22:425 (1933).
2. Supplement to the *International Code of Abbreviations for Titles of Abbreviations*. International Institute of Intellectual Cooperation, 2 Rue de Montpensier, Paris (1930).
3. *List of Periodicals Abstracted by Chemical Abstracts* (1931).

Respectfully submitted,

C. O. LEE, Chairman.

A Medicinal Plant Garden for the College of Pharmacy of the University of Puerto Rico

By E. NUNEZ MELENDEZ,
College of Pharmacy, University of Puerto Rico

Up to the present, the only drug plants of a tropical climate used in Puerto Rico, have been those which grow wild in different parts of the island. However, as these plants are not cultivated scientifically, accurate results in studies undertaken, can not be obtained. This fact, plus the hope that many drug plants of a tropical climate (such as ipecac, cinchona and cinnamom) not indigenous to the island, might be grown in a botanical garden gave the idea for starting the project.

The Board of Trustees of the University granted a tract of land, and made an appropriation for the presentation of a medicinal plant garden for the College of Pharmacy.

The garden under cultivation is under the direction of a member of the pharmacy staff, who is at the same time in charge of the microscopic and macroscopic pharmacognosy courses. This brings a closer connection between the students of pharmacognosy and the botanical garden, thus providing practical learning on drug plants and their products.

The medicinal plant garden will also be of service in the research work that is being started in the College of Pharmacy. There is a large number of drug plants widely used, but which have not been submitted to experimentation either in the field or in the research laboratory, to test and to increase their yield of medicinal constituents.

It is hoped that interest will be awakened in the cultivation of medicinal plants that may be of some economic importance to the island. At present very few are cultivated on a commercial basis.

Another valuable result expected from the project is the preservation and betterment of the medicinal flora of the island.

Up to this time, seeds of some drug plants have been planted and germinated successfully. These include fennel, conium, chamomile, chenopodium, rhubarb, althaea, digitalis and linseed. Nearly all of them have been transplanted successfully. These seeds have been generously given by the Department of Agriculture at Washington and the Medicinal Plant Garden of the College of Pharmacy of the state of Washington.

The Department of Agriculture has also supplied us with bulbs of colchicum, convallaria, iris florentina and iris germanica and with roots of podophyllum and mentha piperita. The results obtained so far are very encouraging.

INSTITUTIONS HOLDING MEMBERSHIP IN THE ASSOCIATION

ALABAMA

Alabama Polytechnic Institute, School of Chemistry and Pharmacy, Auburn; Clifford L. Hare, Dean; Lynn S. Blake, Head Professor (1906*).

CALIFORNIA

University of Southern California, College of Pharmacy, Los Angeles; Laird J. Stabler, Dean (1918).

COLORADO

University of Colorado, College of Pharmacy, Boulder; Homer C. Washburn, Dean (1921).

CONNECTICUT

Connecticut College of Pharmacy, New Haven; Henry S. Johnson, Dean (1935).

DISTRICT OF COLUMBIA

George Washington University, School of Pharmacy, Washington; W. Paul Briggs, Dean (1900).

Howard University, College of Pharmacy, Washington; Charles J. Fuhrmann, Vice-Dean (1926).

FLORIDA

University of Florida, Gainesville; College of Arts and Science, Townes R. Leigh, Dean; School of Pharmacy, B. V. Christensen, Director (1925).

GEORGIA

University of Georgia, School of Pharmacy, Athens; Robert C. Wilson, Dean (1928).

IDAHO

University of Idaho, Southern Branch, College of Pharmacy, Pocatello; Eugene O. Leonard, Dean (1927).

ILLINOIS

University of Illinois, College of Pharmacy, Chicago; William B. Day, Dean (1900).

INDIANA

Indianapolis College of Pharmacy, Indianapolis; Edward H. Niles, Dean (1927).

Purdue University, School of Pharmacy, Lafayette; Charles B. Jordan, Dean (1901).

University of Notre Dame, Department of Pharmacy, Notre Dame; Lawrence H. Baldinger, Director (1907).

Valparaiso University, College of Pharmacy, Valparaiso; Frederick V. Lofgren, Dean (1922).

IOWA

State University of Iowa, College of Pharmacy, Iowa City, Wilber J. Teeters, Dean (1901).

KANSAS

University of Kansas, School of Pharmacy, Lawrence; L. D. Havenhill, Dean (1900).

KENTUCKY

Louisville College of Pharmacy, Louisville; Gordon L. Curry, Dean (1900).

LOUISIANA

Loyola University, New Orleans College of Pharmacy, New Orleans; John F. McCloskey, Dean (1921).

Xavier University, College of Pharmacy, New Orleans; Lawrence Ferring, Dean (1933).

MARYLAND

University of Maryland, School of Pharmacy, Baltimore; Andrew G. DuMez, Dean (1900).

MASSACHUSETTS

Massachusetts College of Pharmacy, Boston; Howard C. Newton, Dean (1900).

MICHIGAN

Detroit Institute of Technology, College of Pharmacy and Chemistry, Detroit; Esten P. Stout, Dean (1923).

Wayne University, College of Pharmacy, Detroit; Roland T. Lakey, Dean (1925).

University of Michigan, College of Pharmacy, Ann Arbor; Howard B. Lewis, Director (1900).

MINNESOTA

University of Minnesota, College of Pharmacy, Minneapolis; Charles H. Rogers, Dean (1901).

MISSISSIPPI

University of Mississippi, School of Pharmacy, Oxford; Elmer L. Hammond, Dean (1913).

MISSOURI

St. Louis College of Pharmacy, St. Louis; Charles E. Caspari, Dean (1900).

MONTANA

State University of Montana, School of Pharmacy, Missoula; Charles E. F. Mollett, Dean (1917).

NEBRASKA

Creighton University, College of Pharmacy, Omaha; William A. Jarrett, Dean (1916).

University of Nebraska, College of Pharmacy, Lincoln; Rufus A. Lyman, Dean (1913).

INSTITUTIONS HOLDING MEMBERSHIP IN THE ASSOCIATION

NEW JERSEY

Rutgers University, The State University of New Jersey, New Jersey College of Pharmacy, Newark; Ernest Little, Dean (1923).

NORTH CAROLINA

University of North Carolina, School of Pharmacy, Chapel Hill; J. G. Beard, Dean (1917).

NORTH DAKOTA

North Dakota Agricultural College, School of Pharmacy, Fargo; William F. Sudro, Dean (1922).

OHIO

Ohio Northern University, College of Pharmacy, Ada; Rudolph H. Raabe, Dean (1925).

Ohio State University, College of Pharmacy, Columbus; Clair A. Dye, Dean (1900).

Western Reserve University, School of Pharmacy, Cleveland; Edward Spease, Dean (1902).

OKLAHOMA

University of Oklahoma, School of Pharmacy, Norman; David B. R. Johnson, Dean (1905).

OREGON

Oregon State Agricultural College, School of Pharmacy, Corvallis; Adolph Zieffe, Dean (1915).

North Pacific College of Oregon, School of Pharmacy, Portland; Antone O. Mickelsen, Dean (1914).

PENNSYLVANIA

Duquesne University, School of Pharmacy, Pittsburgh; Hugh C. Muldoon, Dean (1927).

Philadelphia College of Pharmacy and Science, Philadelphia; Charles H. LaWall, Dean (1900).

Temple University, School of Pharmacy, Philadelphia; E. Evert Kendig, Dean (1928).

University of Pittsburgh, Pittsburgh College of Pharmacy, Pittsburgh; C. Leonard O'Connell, Dean (1900).

PHILIPPINES

University of the Philippines, College of Pharmacy, Manila; Mariano V. del Rosario, Dean (1917).

PUERTO RICO

University of Puerto Rico, College of Pharmacy, Rio Piedras; Lucas L. Velez, Dean (1926).

RHODE ISLAND

Rhode Island College of Pharmacy and Allied Sciences, Providence; W. Henry Rivard, Dean (1926).

SOUTH CAROLINA

University of South Carolina, School of Pharmacy, Columbia; Emery T. Motley, Dean (1928).

SOUTH DAKOTA

South Dakota State College, Division of Pharmacy, Brookings; Earl R. Series, Dean (1908).

TENNESSEE

University of Tennessee, School of Pharmacy, Memphis; Robert L. Crowe, Dean (1914).

TEXAS

University of Texas, College of Pharmacy, Austin; William F. Gidley, Dean (1926).

VIRGINIA

Medical College of Virginia, School of Pharmacy, Richmond; Wortley F. Rudd, Dean (1908).

WASHINGTON

University of Washington, College of Pharmacy, Seattle; Charles W. Johnson, Dean (1905).

State College of Washington, School of Pharmacy, Pullman; P. H. Dirstine, Dean (1912).

WEST VIRGINIA

West Virginia University, College of Pharmacy, Morgantown; J. Lester Hayman, Director (1920).

WISCONSIN

University of Wisconsin, Course in Pharmacy, Madison; Arthur H. Uhl, Director (1900).

